Railway Age

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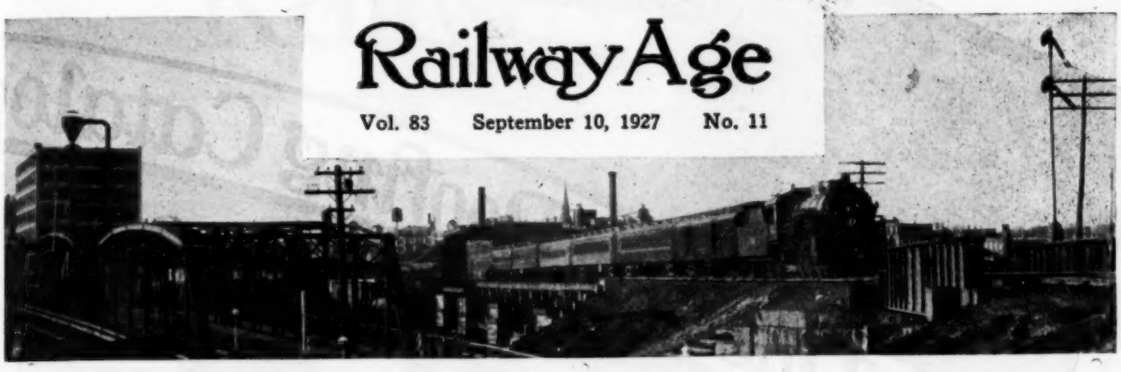

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Railway Age

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Remote Power Switch Layout Saves $7,800 in Fuel Alone

THE benefits derived from the elimination of stops for heavy trains on grades are evident to every operating officer although the actual value of the improved train performance is sometimes intangible. In preparing an estimate for the installation of a remote control power switch at the end of double track near the foot of a 0.4 per cent grade, it was thought by one road that the elimination of train stops would produce an annual saving of $4,000, and the installation was authorized and installed on this basis. To obtain information on which to authorize further similar installations, a careful check was made of this layout for one year which showed that a saving of $7,800 in fuel alone resulted from the elimination of train stops at this point, made possible by the remote power switch. Needless to say this road was convinced of the economic advantages of this remote power switch installation, and has since installed another such layout at the other end of this intermediate section of single track.

A. R. A. Committee on Drinking Water Supplies

AN illustration of the rapidly increasing complexity of railway operation in its various departments is afforded by the suggestions for the protection of drinking water supplies prepared by a joint committee of the American Railway Association and abstracted on a following page. Originally water supply problems were of so little concern to the railways that they were commonly delegated to the bridge and building forces as a secondary task. As the roads have come to realize that efficiency in water supply includes not only provision of an adequate *quantity* for locomotive use but also the proper *quality* at the lowest practical cost, the transfer of this service to a specialized organization charged with full responsibility for its most economical conduct has become more common. The report on drinking water supplies referred to above is another evidence of the trend towards specialization in this direction. With the development of highly concentrated centers of population new problems have arisen for the communities at large and for the railways serving these communities. Among these problems is the replacement of the "town pump," with its liability to contamination, with a water supply of known purity. For a time the railways lagged behind municipal authorities in the consideration of this phase of their drinking water supplies, in spite of the fact that they are called upon to provide water for large numbers of patrons using their stations and their trains as well as for their employees in shops and elsewhere. The suggestions of the Committee on Drinking Water Supplies very properly cover not only the protection of the source of supply, but care in the handling of the water in the various steps preliminary to its use.

Freight and Passenger Equipment Orders

WITH another one of the summer's proverbially quiet equipment months completed, orders for passenger and freight cars are still found to be running ahead of what they were in 1926. In the four weeks reported in the issues of the *Railway Age*, ending August 27, orders for passenger cars were 36 as against 1 last year in August. In the eight months, ending with August, there were 1,207 passenger cars ordered as compared with 929 in the same period a year ago. In 1926, the 1,200 figure was not reached until November. Freight car orders in the four weeks, ended August 27, amounted to 1,066 in contrast to 164 in August, 1926. In the eight months, freight car orders amounted to 44,465 as against 42,271 in the same period a year ago, so it is seen that even with the equipment market as quiet as it has been of late, at least two classes of equipment show some improvement in the number of orders placed to date over the 1926 figures for an equal period.

The Superintendent's Job Grows and Changes

THE position of superintendent has been raised, in the past few years, from that of a general foreman of transportation to that of an executive. The requirements of the position are changing daily and call for the exercise of more and more executive talent on the part of the superintendent. The operating department is no longer his exclusive concern. He is required to turn an attentive eye to public relations, to traffic, to freight claim prevention and to numerous other details. There has been a feeling in some quarters recently that the superintendent is required to do too much and that his activities should be more closely confined to actual transportation matters concerning his division. Few super-

intendents who give the matter serious thought will agree with this. To be sure, the superintendent's job is no sinecure. But men who search for easy jobs are few in the ranks of the superintendents. The long, hard trail leading to the position weeds out the indolent and the incompetent. Everything that occurs on his division is the business of the superintendent and part of his job. Furthermore, the increasing responsibilities of the superintendent are excellent training for the jobs higher up and they make him a better superintendent while he still retains that position.

Joint Public Relations Work in Britain

THE American railroads, which have made such great progress in their handling of public relations work since war days, are not alone in this regard. The British railways likewise are engaged in praiseworthy effort of similar nature. Individually, as is usual in this country, they have their publicity and advertising organizations. Collectively they maintain an information bureau for the dissemination of facts about the railways in general. Moreover, they are also engaging in joint activity in advertising. An example of the latter was the establishment of a railway exhibit at the recent advertising show at Olympia, London. At this exhibit, in which the four principal railways joined, no effort was made to tell the story of one particular line, but rather the message of all the railways was given—the part the railways play in British prosperity, the comparatively small part the freight rate plays in the cost of a given article and so on. Representatives of the railways expert in various phases of the work were present to answer inquiries. Public relations work, outside of competitive sales effort by individual companies, usually takes the form of the dissemination of information about the industry, letting the facts speak for themselves. The benefits of such work inure to all the railways, and it is undoubtedly as fitting that they should undertake it jointly when it takes the form of advertising, as it is when only a news or information service is involved.

Reduction of Locomotive Delay at Terminals

CONSIDERABLE publicity has been given recently to locomotive runs of unusual length and their influence in making possible more intensive utilization of motive power. Equally important to this same end is the reduction of delays to locomotives at terminals. One of the most important means of accomplishing this result now being considered is the reduction of firing-up time by filling boilers with hot water from the hot water washout system and building up steam pressure with steam piped from the terminal's stationery boilers. An illustration of what can be accomplished is afforded by a recent test in which a Pacific type locomotive, filled with one gage of hot water, was steamed to a working pressure of 100 lb. in 14½ min. In six more minutes, this pressure was brought up to 150 lb. at which time the locomotive was moved out of the enginehouse, the fire lighted and the engine placed on the forwarding track. This test took place in a 16-stall enginehouse equipped with two 210-hp. oil-fired boilers operating at 200 lb. working pressure and provided with a modern hot water washout and filling system, and with means for piping steam direct from the stationary to the locomotive boilers. The average time to fill and steam locomotives to a working pressure at this terminal is 30 min. and as many as three locomotives have been filled and steamed at this rate simultaneously. Another feature of interest is that locomotives are steamed up to the popping point and the safety valves tested at the monthly inspection period without lighting a fire. Further tests of this method of firing up locomotives at terminals will be looked forward to with interest because of its potential value in the reduction of locomotive terminal delays.

Meeting the Schedule of Construction

CAPITAL for railway improvements is now available at lower rates of interest than in the years immediately following the termination of federal control. Notwithstanding this, any improvement involving a large outlay immediately imposes upon the management an additional fixed charge which will not be offset by savings in operating costs until the added or improved facilities can be put to use. As a matter of fact, the period of construction is frequently one of appreciably increased operating expenses because of the interference which the construction work imposes. For these reasons every effort is made to shorten the time of construction to a minimum. This rushing of improvement work is not, however, without its serious disadvantages. With the added interest cost of each month's delay definitely set forth, pressure is imposed by the management on the construction organization to obtain the scheduled rate of progress, and in spite of the care exercised in the awarding of contracts to insure that the work is let only to firms of established reputation, unforeseen difficulties, unfavorable weather or other contingencies are apt to cause some delays. In the face of such predicaments, members of the construction organization may easily be led to feel that quality is of considerably less importance than quantity and that certain provisions of the specifications may be waived or overlooked in the interest of greater progress, particularly as such deviations from the letter of specifications will not be evident whereas failure to meet the construction schedule will be noted at once by the management. This tendency is a dangerous one and should be carefully watched. It is often better, for example, to build a temporary structure than to proceed with work on an important concrete bridge if the time available is too short to permit of high grade construction practice. It takes courage to insist upon a proper interpretation of specifications when this will result in delay, or to admit that a certain part of the work cannot be carried out properly within the time available, but it will pay in the end.

The Cost of an Engine Failure

THE cost of an engine failure is always more or less indeterminate. It is always substantial, however, and probably always *more* than estimated or appreciated, taking into account all contributing elements. The cost of a specific failure is analyzed by one railroad as follows: Assume that a Mikado type locomotive of average weight and hauling an average freight train fails on account of a broken main rod within a radius of 50 miles of the initial terminal, causing damage to one crosshead, guides, cylinder head, piston rod and head. The material expense for one main rod will be $100 and other material $158.71, plus seven per cent or $18.11 for stores expense. The labor cost of application, including enginehouse and back shop, will be $66.75, plus shop expense $14.19. If necessary to send a machinist and helper out on the line to block the motion work so that the locomotive can be brought to the terminal there will be an additional charge of $32.40, making a total charge for repairs to the locomotive alone of $390.16. The relief locomotive will require an extra engine crew at a minimum cost for 100 miles of $13.23. The items of terminal cost in connection with the relief locomotive will be: labor, $8.45; supplies and material, $3.15; fuel, $16.00; engine repairs and depreciation, $10.60, or a total cost of $51.43. This is the cost of obtaining the service of one locomotive within a radius of 50 miles in which 100 miles minimum is allowed. Further delay to the freight train while waiting for the relief locomotive and the interference to and necessary rearrangement of the train service are estimated to cost $33, making a grand total cost of $474.59 for this engine failure. Admittedly the cost due to train delay and interruption of the service is the one element most difficult to calculate, and in many cases it may far exceed $33. The cost, entirely omitting this element, however, is sufficiently large to justify the roads in the determined efforts which many of them are making to minimize engine failures.

Helpful Literature for the Traveler

THE passenger traffic departments in their efforts to increase travel over their lines do much advertising and publish many attractive folders and pamphlets about the territories which they serve. In some instances, in addition to describing and illustrating the scenic beauties and telling of other advantages they draw attention to and comment on notable or significant historical events or personages associated with the different localities. Undoubtedly these things have influenced many people to make vacation trips to such places; they have also influenced business and professional men in the selection of routes to given destinations. May it not be advisable to go a step further with such literature? Young people of school age, educators and many of the older folks look upon such trips as a means of continuing their education and are desirous of getting an understanding of the historical background as well as the present conditions of the various parts of the country which they visit. If they knew how to go about it many of them would read in advance, or while planning the trip, or on the long rides to reach their destinations, interesting books of a historical nature, or fiction which frequently is a great help in interpreting historical events or life in different periods or the present spirit or problems of a particular locality or of a region.

Several experiments in attempts to secure information about books of these types referring to particular localities have met with the most disappointing results, although in fairness it should be stated that in all cases lack of time prevented calling upon trained librarians in the different places—they would probably have proved most helpful. Incidentally also it should be noted that some few observation cars on long distance limited trains have libraries. Some of these have an excellent selection of historical books covering their territories but fiction of the above mentioned type—the kind of literature that would make an especial appeal to most people on a long railroad trip—is not much in evidence in the libraries.

Opportunity Offered

Does this not offer a real opportunity to passenger traffic departments of some roads? A note on some of their special folders of the best fiction titles and a few of the more important serious books referring to some of the more notable places or districts on their lines may do much to stimulate interest on the part of prospective travelers, particularly if information is given as to where the books may be obtained. Travelers to Europe and foreign lands ordinarily do much reading and studying both before and after planning their travel schedules. Would the railways not profit by encouraging a similar practice on the part of people who are looking forward to making trips to different parts of this country and Canada? It is conceivable that some roads could advantageously devote an entire booklet to suggestions of this sort, not forgetting a section for the children who may have been initiated into the mysteries and pleasures of social science as geography in its humanized form is now designated in some schools.

It will undoubtedly be something of a task to compile this information, but much assistance can be counted upon from trained librarians in the different localities. Experience in dealing with local bookstores has met with disappointing results, even in large cities. In these days of many books few of those in charge of such stores resemble the old-fashioned bookseller who took a real pride in not only knowing his stock but in being able to answer authoritatively questions of this sort. Several parts of the country, rich in historical background but backward in exploiting it and other advantages in the effort to attract visitors, are awakening to their possibilities in this direction. The railroads have a common purpose with organizations promoting such movements and might receive much help from them in compiling the booklists. Obviously such lists should give enough information about each book so that a reasonably intelligent selection could be made of those titles which would best meet the peculiar needs or tastes of the individual.

Seven Years Under the Transportation Act

ON September 1 there had elapsed seven years since the war-time government guaranties of net return to the railways expired and the provisions of the Transportation Act went into full effect. Railway operating and financial results during these years have been determined principally by general business conditions, by management and by regulation.

In 1921, railway traffic so greatly declined that, although the large advance in rates made in 1920 was in effect, the percentage of net return earned by the railroad industry was the smallest in history. The next year industrial, commercial and financial conditions began to mend and have been improving ever since. The situation of agriculture has been unsatisfactory, but even its condition is improved, and, after numerous fluctuations, prices of farm products now average almost as high as those of other commodities. The passenger business of the railways has declined until it is now smaller than before the war, but the improvement in general business has given them a large increase in freight traffic. This has been especially true in the East and South. Not only have the western railways lost the most passenger business in proportion, but never until the first half of this year did their freight business slightly exceed that of 1920.

There has been achieved a remarkable increase in operating efficiency and economy. Inspired with new confidence by the assurances of the Transportation Act and by a determination not only to vindicate the action of the public in returning the railways to private operation but to create an entirely new public sentiment toward them, their managers have boldly invested billions of capital in improvements, have co-operated as never before in distributing cars according to the demands of production and commerce, and have sought and obtained through the regional shippers' advisory boards a new co-operation with the shippers.

The public has had no ground for complaint but much ground for commendation regarding the way the railways have been managed. Probably to the improvement in their freight service are more largely due present extraordinary business and financial conditions than to any other single cause. The railways, on the other hand, have no ground for complaint, but much reason for gratification, because of the present attitude of the public, and especially of shippers, towards them.

In spite, however, of the record-breaking volume of freight business handled within recent years, of the good freight service rendered and of the improvement in public sentiment, the railways, especially those of the west, have good ground for complaint regarding the net returns they have earned and are still earning. The assurances of the Transportation Act regarding the returns they would be allowed to earn have not been fulfilled. Only in 1926 have the railways as a whole earned the returns the Interstate Commerce Commission held in 1920 and in 1922 that they should be allowed under the Transportation Act, and they are not doing so now. From September 1, 1920, to June 30, 1927, the eastern roads had failed by $412,000,000 to earn what the commission had held would be a fair average return on their "tentative" valuation, the southern roads were short about $70,500,000, and the western roads $791,000,000; a total shortage of $1,273,000,000, or about $182,000,000 annually. During the first six months of this year the return earned by the roads as a whole was only at the annual rate of 5.27 per cent on their tentative valuation and that of the western roads alone at the rate of only 4.08 per cent.

It was naturally assumed that under the federal valuation law the railways would be given a final valuation in accordance with the long line of decisions of the Supreme Court of the United States in valuation cases, but the Interstate Commerce Commission has now definitely sought to establish as a basis for the regulation of rates a policy of valuation much less favorable to the railways.

That the railroad industry is in a condition of unstable equilibrium is illustrated by the net returns earned by it thus far this year, especially in June and July. With a large volume of freight business moving, comparatively small changes in freight and passenger business, in wages, and in taxes have caused substantial reductions to occur in the net operating income earned. The railways are being so regulated that they can barely earn, or actually cannot earn, the so-called fair return in a period of heavy traffic in disregard of the plain fact that under the same kind of regulation they must earn less than the so-called fair return if business declines. And the most remarkable feature of the situation is that for this kind of regulation the Interstate Commerce Commission is entirely responsible. It is not warranted by decisions of the courts or by statutes passed by Congress. It is not demanded by public sentiment and would not be indorsed by it if the public understood what is going on.

The natural effects of the policy that has been followed have been largely prevented by efficient railway management. Efficient management has increased net earnings in spite of unreasonable regulation of rates. It has improved freight service so much as to make possible hand-to-mouth buying and large reductions of commercial inventories, with the result that in a period of great business activity so much capital has been released from inventories that commodity prices and interest rates have declined; and low interest rates have caused advances in the prices of railway as well as other securities out of all proportion to the increases that have occurred in net return.

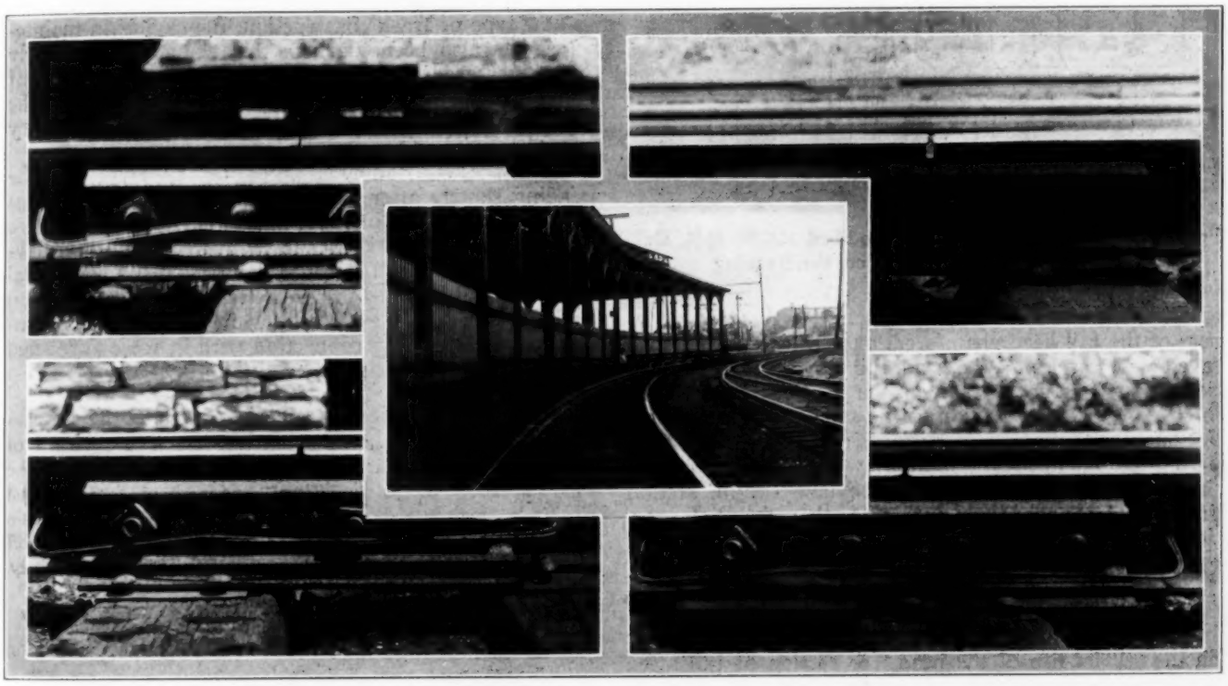
The fact, however, that railway regulation has not had the effects that it would have had if railway freight service and general business and financial conditions had not improved so much does not justify the kind of regulation the railways have been given or warrant the belief that a continuance of it will not do harm in future. It is the duty of the managers of the railways to conduct them as efficiently as practicable, and this they have done and are doing. It is the duty of the commission, as a matter of both public policy and law, so to adjust rates that each large group of railways, under such management, will be able to earn a fair average annual return on a fair and lawful valuation. It is a strange situation when those regulated by special laws carry them out more energetically and conscientiously than those charged solely with the duty of administering them.

Reading Tests New Rail Section

Head-free pattern with head-free joints is adopted as standard after study of service in track

By J. C. Wrenshall
Engineer, Maintenance of Way, Reading Company

A DEPARTURE from the common form of track construction generally employed in this country is the use of a new section of rail known as the "head-free" rail with head-free joints which has been adopted as standard by the Reading after several years' service tests. This type of construction has not only stood up satisfactorily but has done much to eliminate low and battered joints, to increase the life of rail, and to reduce the necessary amount of track, and more particularly, joint maintenance.



Views of Four Head-Free Rail Joints After Heavy Service—In the Center, the Heavy Traffic Curve on Which the New Rail Section and Joints Have Proved Effective

First Step in 1922

The first step in arriving at the Reading's present type of track construction was taken in 1922, when, during the first three months of the year, 4,000 continuous head-free rail joints were applied to new 130-lb. P. S. rail on both curved and straight track. The head-free joint differs from the ordinary type of joint mainly in that its head extends inward, bearing entirely upon the web and head fillet of the rail, leaving the lower face of the rail head entirely free from bearing on the bar. The joint differs also from the ordinary continuous joint in that it is intended for use with special abrasion plates, functioning as tie plates, which make it possible to reduce the length of the toe of the bar below that ordinarily used.

Since the first installation of the head-free joints in its tracks, the Reading has watched their action and the results effected, and now, after the joints have been in service for five consecutive years, has reached some fairly definite conclusions. In the first place, it is felt that the new bars have greatly reduced the difficulties formerly experienced with battered rail ends and low joints. The joints equipped with the head-free bars have remained a trifle high, whereas battered rail ends and low joints occurred in practically the same locations and under the same traffic and loading conditions where head contact joints were used, having take-up between the head of the splice bars and the web of the rail.

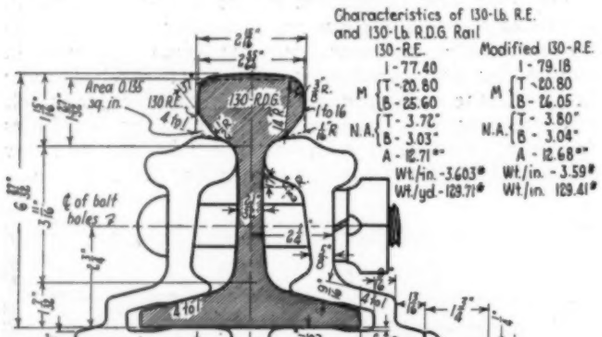
New Joints Show Advantages

On the Reading, it is believed that the favorable results effected with the head-free joints are due to the positive bearing which exists between the heads of the bars and the head fillet of the rail, together with the fact that the heads of the bars are free from the under side of the rail head, which prevents the bars from acting as anvils under passing loads. It has also been observed that as wear takes place on the bottom of the head-free bars, the base moves inward, contrary to the action of the head-contact bars which afford clearance between their heads and the web of the rail, where the bases of

the bars have a tendency to move outward as the heads become worn.

Test Special Rail Section

Until 1925 the Reading had confined the use of head-free rail joints entirely to P. S. and R. E. section rail, but in that year a test installation was made of 6,000 tons of a special section of rail, designed specifically for use with the head-free joints. This section takes advantage of the fact that all that the head-free type of joint requires at the head of the rail is the fillet anchorage between the web and the head of the rail. This being the



Form and Characteristics of the Modified 130-lb. R.E. Rail and Head-Free Joint Used on the Reading

case, the new section was designed with the lower corners of the rail head chamfered, and with the metal thus saved added on top of the head, the remainder of the section being exactly the same as the R. E. section. This, in effect produced a section of the same weight per yard, but one affording greater stiffness and at the same time permitting an increased limit of wear. In the case of the rail used on the Reading, the new 130-lb. section provides a rail head 3/32 in. higher than the R. E. section, with a little over ¼ sq. in. additional area over the top of the head.

The Most Severe Test

Possibly the most severe test made by the Reading on the service-life of the head-free section of rail fitted with head-free joints has been on an important through track just outside of the passenger station shedding at Reading, Pa. This particular section of track is on a 10-deg. curve, 900 ft. long, with two 12-deg. points and a maximum super-elevation of 2 in., and is subject to heavy traffic at a speed of approximately 20 miles per hour.

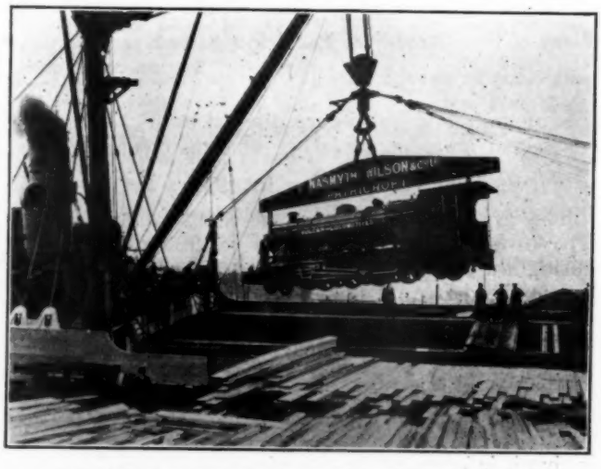
In October, 1925, standard 130-lb. R. E. rail was removed from this track after it had carried 24,200,000 tons, and the average amount of metal abraded from the high rail was found to be 1.07 sq. in., while that worn from the low rail was 0.32 sq. in. Head-free rail of 130-lb. section, with head-free joints, which was then laid in this track in October, 1925, until December, 1926, when the high rail was removed, carried 47,508,700 tons of traffic, or practically twice that carried by the rail previously in this location, and yet the high rail at that date showed an average of only 0.722 sq. in. of metal abraded, while the low rail had been worn only 0.273 sq. in. The low rail, which was not removed, is still in this section of track after having carried over 65,000,000 tons of traffic and it is estimated that it is good for considerable additional service as the rail ends are still a trifle high and show no evidence of batter.

As a general rule, measurements of 130-lb. R. E. rail coming out of the track on the Reading have shown about one square inch of the head abraded, from which, by comparison with the amount of wear of the head-free rail, it is concluded that the additional wearing area available in the rail of the latter section is at least 25 per cent, in spite of the fact that only about ¼ sq. in. of additional metal is found in the top of the head. The fact that twice the service is being secured from this rail is believed to be due to the fact that cold rolling of the rail in the track takes place, improving the quality of the steel, before a large percentage of the total area of wear has been abraded. The increased life that is being secured on the Reading from this section of rail as well as the greater life secured from the 130-R. E. rails equipped with head-free joints, is also due in large measure to the type of joints in use, which have proved effective in reducing battering of the rail ends.

In addition to the large saving which has been effected by the Reading through the increased life secured from its new type of track construction, the saving in maintenance has also been marked, this being due primarily to the increased stiffness afforded in the new section of rail, together with the advantages demonstrated in the head-free joints, which have reduced the tendency toward low joints to a minimum.

With these advantages becoming apparent on the Reading shortly after the first installation of 6,000 tons of the head-free rail in 1925, 20,000 additional tons were laid in 1926 and 34,000 tons in 1927, the rail section having become standard on November 8, 1926. This special section of rail is rolled under the license of the Thomson Rail Corporation, New York, while the head-free continuous joints used in connection with it, were furnished by the Rail Joint Company, New York.

THE PULLMAN COMPANY is posting a bulletin in sleeping cars which reads: "Passengers can increase the high standard of immunity from accident on Pullman cars by joining in the Pullman Safety campaign. Regulations such as those against placing baggage in aisles, standing on platforms while the train is in motion, opening vestibule doors and jumping on or off moving cars, are for the passengers' protection against injury. It is better to be careful than lucky."



Shipping Locomotives from Manchester, England

Locomotives Being Taken Aboard S. S. "Beldis" Which Is Equipped With Crane and Is Specially Designed for Stowing Locomotives Set Up in Working Order.

Joint Committee Presents Report on Drinking Water

Suggests practices designed to protect supplies against contamination

VALUABLE suggestions for the protection of drinking water supplies from contamination at the source as well as in its distribution and handling are incorporated in a report prepared by the Joint Committee on Drinking Water Supplies of the American Railway Association which has been approved by the Mechanical, Engineering and Operating divisions.

In accordance with a recommendation contained in the report, a standing Joint Committee on Drinking Water Supplies consisting of representatives of the Mechanical and Engineering divisions, the Medical and Surgical section, and the United States Public Health Service has been appointed to give further consideration to this subject. The personnel of this standing committee is as follows:—Medical and Surgical Section: Dr. T. R. Crowder, director, department of sanitation and surgery, Pullman Company, Chicago; Dr. D. B. Moss, chief medical and surgical officer, Chicago, Burlington & Quincy, Chicago; and Dr. J. P. Kaster, chief surgeon, Atchison, Topeka & Santa Fe, Topeka, Kans.; Engineering Division: R. C. Bardwell, superintendent water supply, Chesapeake & Ohio, Richmond, Va.; Dr. S. C. Beach, health officer, Illinois Central, Chicago; and A. B. Pierce, engineer water supply, Southern, Washington, D. C.; Mechanical Division: John Purcell, assistant to vice president, Atchison, Topeka & Santa Fe, Chicago; and J. E. O'Brien, chief of motive power and equipment, Seaboard Air Line, Savannah, Ga.; U. S. Public Health Service; E. C. Sullivan, associate sanitary engineer, New York City; I. W. Mendelsohn, associate sanitary engineer, Chicago; A. P. Miller, associate sanitary engineer, Washington, D. C. The Standing Joint Committee held its initial meeting at Chicago on August 8, and elected Dr. J. P. Kaster, chairman, and Dr. S. C. Beach, vice-chairman.

An abstract of the report follows:

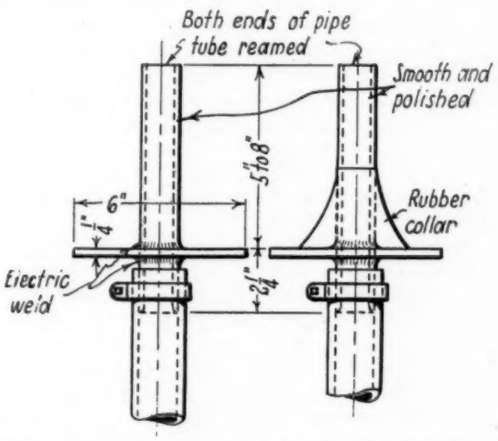
Coach Yard Design from a Sanitary Viewpoint

It is difficult to construct and maintain a coach yard in such a way that it is absolutely sanitary. Careful consideration should, however, be given this question of sanitation when designs for new yards are made up, and in some cases present intallations can be improved with respect to this feature without any large expense. Some of the elements of design which should be considered are as follows:

Platforms of concrete or brick laid in cement on either side of the tracks are the most desirable. Both alternate narrow and wide platforms as well as cross walks should be of a maximum width permitted by the local conditions. A maximum of 10 ft. is considered sufficient. The platforms should drain to the gutters. The best form of gutter construction is concrete or brick laid in cement, with sufficient fall and width and a number of grate covered outlets to carry off all wash water and surface drainage. Rat protection is also necessary in some locations. One method of rat protection is the construction of a curtain wall at the outside edge of each gutter to a depth of 24 in. The drain pipes should be of ample size and have manholes where they connect with the sewer. Cast iron is the best pipe for use in drains where they pass under tracks.

The type of hydrant used will vary in different localities, but it is felt that the 18-in. high type is best from a sanitary viewpoint. However, whether the high type or the depressed type is used they should be installed and maintained in a most sanitary manner. They should be painted white and the hose outlets should be kept free from all contamination. It is undesirable to have any water connections in the gutter or between rails.

Where a dining car commissary is installed in a coach



Nozzle Recommended for Use on Hose Employed in Filling Coach Tanks—With Collar on Right, Without Collar on Left

yard, the food may best be handled if a special track is installed on either side of the commissary, to prevent hauling of food about the yard. When this is impossible, food should be conveyed in closed conveyors.

Car toilets when being flushed and cleaned in the coach yards, should have an arrangement at the outlet to convey all water and other matter direct to the gutters. Containers may be used if desired to catch the wash water and then emptied into the sewer. Coach toilets should be well flushed at the time they are locked before arrival at terminals in order that coach yard contamination may be reduced to a minimum.

Adequate toilet, wash room and locker facilities, conveniently located for the use of the employees, should be installed in the yard. Where men and women are employed, toilets should be provided for each sex. If running water and sewers are available, all toilet fixtures should be connected thereto. The toilets should be supplied with toilet paper. All water closets, urinals, wash rooms and lockers should be kept in a clean and sanitary condition at all times.

Most roads experience trouble due to employees using coach toilets after they have been cleaned and locked in the coach yards. If rigid instructions are issued and posted against this practice, and adequate toilet facilities are conveniently installed, it will discourage this unsani-

tary practice. Consideration should be given to the proper and convenient location of sanitary drinking fountains for employees.

Metal rat-proof garbage cans in sufficient numbers and with suitable tight-fitting covers, should be provided in dining cars and coach yards to care for all refuse, food and other wastes. Coach yards should be policed daily for the collection of both garbage and refuse and all such material should be disposed of in a sanitary manner. The best method for such disposal is by incineration.

A table or platform should be provided in coach yards where coolers are taken from the car for the purpose of cleaning. The entire coach yard should be kept free from rubbish and platforms and gutters should be flushed daily with hose pressure.

Care in Handling Ice

Practically all passenger cars are now equipped with water coolers of a type where the ice and the water do not come in contact. However, there is some ice, particularly for diners, which may come in contact with drinking water and in such cases particular care should be used in the handling of the ice to avoid contamination. A suggested practice in such cases is to handle the ice in metal lined boxes, mounted on trucks, the box being preferably 18 in. in depth. The ice can be broken in these boxes and handled with suitable tongs to clean buckets in which it can be distributed to the containers in the cars as required. Such ice when taken from storage should be washed with pure water. The psychological effect of painting the containers on trucks white is of advantage.

The ends of hose used for filling water tanks should be protected in some way to avoid contamination, particularly when the hose is dragged on the ground. This protection may be secured in a number of ways but the simplest satisfactory protection is the use of a metal disc fastened on the nozzle. With this design the nozzle should be of smooth metal and the disc approximately six inches in diameter, placed from five to eight inches from the discharge end. The discs should be welded or firmly attached to the nozzle which should extend back sufficiently to insure the proper connection with a tapered solid rubber collar slid over the discharge end of the nozzle and carried back to the disc for the prevention of back flow. This rubber collar is not, however, always necessary. The purpose of the disc is to prevent the employee from dragging the nozzle and to keep the tip from coming in contact with the ground.

The drinking water for use by employees in shops should be such as to safeguard the health of the employees. When found necessary, there are four methods of treating drinking water which are extensively used in railroad shops; (1) boiling of water. (2) distilling of water. (3) chlorinating of water. (4) electric sterilizing machines.

Local conditions have a bearing on which type of water treatment is most suitable but whatever system is used, care should be taken in the handling of the water after its treatment to avoid any contamination. Particular attention should be paid to the condition of the containers for handling the water. In many installations this feature is taken care of by handling the water through pipe lines. The ice in the drinking fountains should not come in contact with the water. The Public Health Service does not attempt to supervise the quality of drinking water supplied shops unless it is the same supply which is used in watering trains in interstate traffic.

In many water supplies a certain quantity of non-pathogenic bacteria is present but this is not necessarily detrimental to the health of those drinking the water. However, close attention should be paid to any indication of a contamination of the water entering through any opening. Such openings are more apt to become larger than smaller through the action of the agent producing it. Any opening in a water supply, which permits contact with the water before consumption, by either a direct or indirect route affords a possibility for contaminating the water. An example of direct contact is the small amount of water leaking in at the base of the pump, due to a worn-out gasket or the matter washed into the supply through an open top pump. Priming is a dangerous form of direct contact as the priming water may be polluted and so contaminate the whole supply.

The safety of these small supplies depends upon their proper location, construction and maintenance. The following principles govern location and construction:

(1) A depot, section house or stockyard well should be located, (a) as far as possible from gross pollution, such as privies, cess-pools, sewers, etc., and in no case should the distance be less than 50 ft.; (b) high enough above surface to prevent surface flooding and with drainage in all directions.

(2) The construction should be absolutely water-tight for a depth of at least six feet and to a greater depth if possible, below the ground surface, depending on the character of the soil, and should extend above the surface for at least a foot. Projections above the surface, overlapping covers for man-hole openings, gaskets and stuffing boxes, etc., are means of making the constructions such as to prevent contaminating matter from entering the well.

(3) After the well has been properly located and constructed the safety of the supply depends upon the proper maintenance and operation. The persons responsible for these supplies, should be educated to understand thoroughly the purpose of the careful maintenance, necessary to assure the proper protection of the supply. Periodical inspections and laboratory examinations should be made with the view of detecting defects and making corrections before the safety of the supply becomes menaced.

It is a recognized fact that shale does not purify or filter water as sand and gravel do. Shale simply absorbs and holds water as a sponge and where wells are dug through shale, the water-tight construction should be carried deep enough to prevent contamination by seepage through it. Where it is necessary to dig a well in this character of soil the water should be thoroughly analyzed to know that it is pure before the well is completed.

Employee Instruction

Attention is called to the importance of instructing employees in the careful and cleanly handling of ice and water. Some employees in this class of service are likely to become careless in the performance of their duties and the supervision should keep the question of sanitation before them and insist upon the observance of the proper practices. The supervisory officers should give careful consideration to the type of men who are selected for the icing and watering of cars. Much good will be accomplished if the best type of employee is used for this service. Personal cleanliness on their part should be rigidly enforced.

On many passenger train cars drinking water coolers must be filled by the use of buckets. It is therefore recommended that these buckets be fitted with a complete cover, and a spout of size sufficient to empty the bucket rapidly. These buckets should be painted white and marked "For Drinking Water Only," and when not in use should be placed in a suitable cupboard or other protected location.

In some localities it is absolutely necessary to transport water for drinking and culinary purposes in tank cars or other containers. Wherever this is done, close attention should be given to the condition of the equipment and all possible sources of contamination eliminated.

Freight Train Curve Resistance

Results of tests made with five freight trains on a one-degree and a three-degree curve

By Edward C. Schmidt
Professor of Railway Engineering, University of Illinois, Urbana, Ill.

THE University of Illinois, Engineering Experiment Station, Urbana, Ill., has recently published Bulletin No. 167 entitled, Freight Train Curve Resistance on a One-Degree Curve and a Three-Degree Curve. This bulletin presents the results of tests made with five freight trains on a one-degree curve and a three-degree curve. The test results relate exclusively to the resistance of the cars composing the train—the curve resistance of the locomotive is not discussed. The results apply only to freight cars with four-wheeled trucks, although the resistance of four-wheeled truck passenger cars of similar wheel-base is probably not very different.

The tests were undertaken primarily to determine the relative merits of three designs of freight car trucks, that is, to determine the effects of truck design upon train resistance on straight track and on curves. In arranging the tests it was clear from the outset that they would provide an exceptional opportunity to measure curve resistance and they were so planned as to make this their secondary purpose. To this end provision was made to acquire and record such data as super-elevation, rail wear, variation in gage, and the like, which were not of first importance for the primary purpose.

These final results are assembled in Table I in which the curve resistance, expressed in pounds per ton per degree of curve, is given for each of the five trains in the first five lines of the table. The sixth line presents the average values of curve resistance at the three speeds for all trains; and the last line gives the average results on each curve for all trains, when speed distinctions are ignored.

By plotting the values of curve resistance for each of the trains, as given in Table I, we obtain the diagrams shown in Fig. I—the upper diagram giving the final results on the one-degree curve, and the lower diagram those on the three-degree curve. In this figure the lines marked "average" show, for each curve, the average values of curve resistance for all five of the trains. Fig. I, like Table I, presents the final results of these tests.

Table I—Final Values of Curve Resistance, at Various Speeds for Each of the Five Trains, and Average Values for All Trains

Train numbers	Curve resistance—pounds per ton per degree					
	On the one-degree curve			On the three-degree curve		
	10 m.p.h.	20 m.p.h.	30 m.p.h.	10 m.p.h.	20 m.p.h.	30 m.p.h.
1	0.35	0.47	1.00	0.70	0.67	0.61
2	0.54	0.46	0.25	0.57	0.47	0.27
3	0.57	0.50	0.60	0.55	0.45	0.48
4	0.46	0.12	0.52	0.69	0.54	0.29
5	0.66	0.75	0.39	0.70	0.75	0.41
Average for all trains	0.52	0.46	0.55	0.64	0.58	0.41
Average, disregarding distinctions in speed.		0.51			0.54	

The bulletin presents the results of 101 tests made with five freight trains in order to find the excess of their resistance on curved track over that on straight track. This excess, termed curve resistance, was determined on a one-degree curve and a three-degree curve; it is expressed throughout in pounds per ton per degree of curve. On each curve tests were made with each train at three speeds—nominally 10, 20, and 30 m.p.h.

Summary and Conclusions

The tests were made on track of fair construction, laid with 70-lb. rails. The average gross weight of the cars composing the test trains varied from 15.1 tons to 48.6 tons. The tests were run during warm weather,

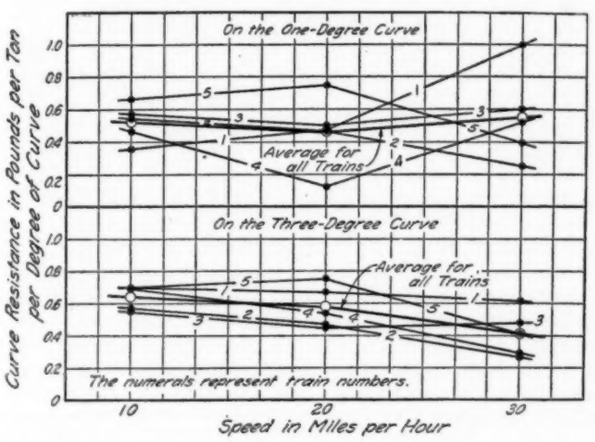


Fig. I—Curve Resistance at 10, 20 and 30 m.p.h. for Each of the Five Trains, and Average Values for All Trains

the air temperature varying from 62 to 95 deg. F. During only two tests did the wind velocity exceed 15 miles per hour. All but seven of the tests were run when the wheels and rails were dry. Both Table I and Fig. I give the results for each train at each of the three speeds, and also the average results for all trains. All the results apply to periods during which the entire train ran on curved track.

On the one-degree curve the curve resistance amounted to 0.52, 0.46, and 0.55 lb. per ton per degree of curve, at speeds of 10, 20, and 30 m.p.h., respectively. On the three-degree curve it amounted to 0.64, 0.58, and 0.41 lb. per ton per degree at the respective speeds. Disregarding distinctions in speed, the general average curve resistance for all trains was 0.51 lb. per ton per degree on the one-degree curve, and 0.54 lb. per ton per degree on the three-degree curve.

Since the super-elevation on the three-degree curve was a little greater than is customary, it is probable that the results for this curve are somewhat greater than the curve resistance ordinarily to be encountered on this curvature. The excess is probably slight.

Excluding the results obtained on the one-degree

curve with one train at 30 m.p.h., the average results for all trains show, on both curves, a decrease in curve resistance as the speed increases. The rate of decrease is not great, nor is it uniform.

The general average curve resistance, disregarding speed distinctions, was practically the same on the two curves. The test results offer no clue as to whether the curve resistance would have varied with track curvature had it been practicable to test the trains on a greater variety of curves. The few tests run on wet rail afford some evidence that curve resistance is diminished when the rails and wheels are wet.

The analysis of the results indicates that they may safely be applied to predict the curve resistance of all freight trains, running on either good or poor track, and under either summer or winter temperatures. It is not certain whether the results are applicable to track curvatures much in excess of three degrees.

4-8-2 Type Locomotive for the Central Vermont

THE American Locomotive Company recently delivered four 4-8-2 type locomotives to the Central Vermont for use in passenger service. These locomotives develop a tractive force of 44,000 lb. They have 73-in. drivers and cylinders 26 in. in diameter and 28-in. stroke. The boiler operates at a pressure of 200 lb. The total weight of one of the locomotives is 325,000 lb., of which 215,500 lb. is carried on the drivers. This weight, together with the tractive force of 44,000 lb. permits a factor of adhesion of 4.9. These locomotives are designed to negotiate 18 degree curves.

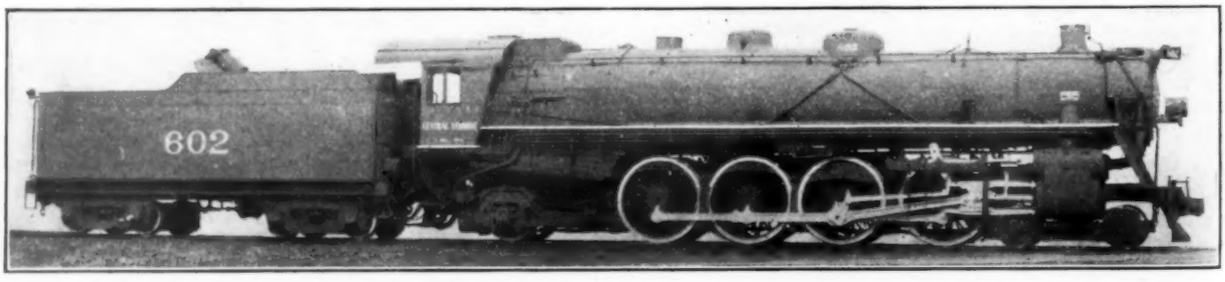
As shown in the illustration, the locomotive presents an unusually clean appearance, only few pipes and accessory equipment being applied to the outside of the jacket on the boiler. To improve the appearance of the locomotive, the compressed air reservoirs were located between the frames, which arrangement permitted a continuous running board from in front of the cab to the side of the smoke box, except for a small section on the left side which is raised over the air compressors.

The length of the smoke box from the center of the stack to the front ring is 60 in. This unusual length for this design was found to be necessary so as to secure a desirable netting and deflecting plate arrangement and also, the required area through the netting, due to the location of the feed water heater in a depression on the top of the smoke box.

The boiler is equipped with a Coffin feed water heater and Type A superheater. Steam distribution is controlled by a Walschaert valve gear and an Ashcroft cut-off control gage; an Alco type C power reverse gear is included in the equipment. The locomotives are equipped with Rogatchoff crossheads. The guides are of the T-head type, used on the top guide only. The bottom guide is of the usual straight type, the bolts in which are driven from the bottom. This arrangement was found necessary in order to secure clearance of the outside bearing trucks which are of Canadian National design and are equipped with floating bushings. Barco joints are used at the main reservoir and air train line connections. The tender has a water capacity of 10,000 gal. and a fuel capacity of 14 tons. It is equipped with a slope sheet coal pusher.

Table of Dimensions, Weights and Proportions of the Central Vermont 4-8-2 Type Locomotive

Railroad	Central Vermont
Builder	American Locomotive Co
Service	Passenger
Cylinders, diameter and stroke	26 in. by 28 in.
Valve gear, type	Walschaert
Weights in working order:	
On drivers	215,500 lb.
On front truck	59,000 lb.
On trailing truck	50,500 lb.
Total engine	325,000 lb.
Tender	191,500 lb.
Wheel bases:	
Driving	19 ft. 7 in.
Total engine	42 ft. 1 in.
Total engine and tender	77 ft. 3¾ in.
Driving wheels, diameter outside tires	73 in.
Boiler:	
Steam pressure	200 lb.
Fuel, kind	Soft coal
Diameter, first ring, inside	74¾ in.
Tubes, number and diameter	181—2¼ in.
Flues, number and diameter	36—5½ in.
Length of tube sheets	22 ft.
Grate area	66.8 sq. ft.
Heating surfaces:	
Firebox and combustion chamber	294 sq. ft.
Arch tubes	14 sq. ft.
Tubes and flues	3,472 sq. ft.
Syphon	76 sq. ft.
Total evaporative	3,856 sq. ft.
Superheating	968 sq. ft.
Comb. evaporative and superheating	4,824 sq. ft.
Tender:	
Water capacity	10,000 gal.
Fuel capacity	14 tons
Rated tractive force	44,000 lb.
Weight proportions:	
Weight on drivers ÷ total weight engine, per cent	66.25
Weight on drivers ÷ tractive force	4.9
Boiler proportions:	
Tractive force ÷ comb. heating surface	9.13
Tractive force × diam. driver ÷ comb. heating surface	666
Firebox heating surface ÷ grate area	4.4



One of the 4-8-2 Type Locomotives Recently Delivered to the Central Vermont by the American Locomotive Company

TAXATION OF RAILROAD PROPERTY in Missouri was the subject of two rulings by Attorney General Gentry of that state on August 30. In one ruling he holds that when a railroad collects traffic charges for itself and non-resident companies, it is liable for taxes only on the amount it collects for itself. In the other ruling he holds that when a railroad company purchases equipment on the installment plan, the title remaining in the equipment company until the final payment is made, the railroad company shall be taxable only on the amount of money actually paid to the equipment company.

Cost Accounting and the Operating Expense Classification

View offered that present form of classification meets carrier's requirements

By Charles E. Parks

Director, Department of Railway Accounting La Salle Extension University, Chicago

FROM the analysis of the meaning of costs and the progress of cost accounting presented in an article having the same title as the foregoing in the *Railway Age* of August 20, 1927, page 339, it was apparent that the fundamental basis of any system of cost accounting must be classifications of accounts which will set forth clearly and separately every element of cost that the accountant is required to incorporate in any cost statement.

Such classifications must not only be classifications of expenditures but must also be an apportionment or distribution of every value which represents a diminishing of or change in the company's assets. The accountant should be able to refer to the accounts of such classifications and lay his finger on every cost element, regardless of how minute, which enters into the cost of any service, operation, or production process.

To enable him to do so with respect to operating costs the accounts may be designed according to two plans: first, from a strictly cost standpoint and, second, by grouping the various separate items of expense into accounts, from which the cost elements wanted may be obtained.

The question is, to what extent does the present and proposed operating expense classifications enable the accountant to ascertain these costs and on which of these plans are the accounts based?

Cost vs. Expense Features of the Classification

An analysis of the operating expense classification indicates that it incorporates both cost and expense features,—it is partly a cost classification and partly a classification of primary expenses.

The total amount included in Income Account No. 531—railway operating expenses, represents the production cost of earning the carrier's operating revenue. If we exclude a discussion of the items of rent, taxes, and interest charges, there can be no question of the cost aspect of railway operating expenses, *considered as one total*. This total, in its final analysis, represents the cost to a carrier of earning a dollar of revenue. It corresponds to the production cost used in factory cost accounting.

For this reason, the fundamental theory underlying the operating expense classification is based on cost accounting—the determination of the cost of earning revenue, But, when we consider the individual primary expense accounts, the cost features of the classification begin to disappear. These accounts do not give the total cost of performing the work, maintaining the facility, or repairing the equipment unit described in the account title. Their purpose is simply to group the operating expenses by primary causes. The accounts record the expense of maintaining the roadway, of repairing certain classes of equipment, of grouping the pay of certain classes of employees, and segregating the expense of operating certain facilities.

At the same time, cost features are introduced into certain accounts. The provisions for distributing the cost of work train service, of store expense, of shop expense, of power plant operation, of gravel pit operation, and of other indirect costs to specific primary accounts are based on cost accounting.

Also, considered as a whole, the classification forms the basis of costs. Included within the primary accounts is every item of operating cost that enters into the production of any class of transportation service, or that makes up the cost of performing any unit of work or maintaining any facility or unit of equipment. The task of the cost accountant is, first, to determine what cost items are desired; second, to locate them in the accounts and then to consolidate them in a cost statement. A statement based on the accounts of the classification will not do this.

A Classification of Expenses

From this it is clearly evident that the operating expense classification, considered from the standpoint of the individual primary accounts, is not a cost classification, but largely a classification of direct expenditures, with provisions for apportioning some items of indirect costs to the accounts benefited. The latter phase is covered by the clearing accounts—store expense, shop expense, operation of sand and gravel pits, and power plant operation.

Neither does the classification attempt to group together under one account every similar item of expense incurred by a carrier. For example, if a railroad management wished to discover the cost of telephone and telegraph service of police or fire protection, no single account would impart the information. Numerous accounts must be consulted before the direct charges of the service can be ascertained.

Take, for instance,* the item of police protection. If a watchman works around a station, his salary goes to account 377, while his expenses go to account 389; if he works at a shop his cost is charged to "Shop expenses" and pro rated on the output; if he patrols the tracks, account 202 absorbs the expense; if he works on a pay car, account 452 assumes the burden.

In the matter of fire protection, the salary of the fire chief or inspector goes to account 201, while the cost of fire drills at shops is charged to account "Shop expenses," and pro rated on the output. The cost of a fire bucket for a passenger car is charged to account 400, while the same bucket on floating equipment goes to account 307, except should the floating equipment be of the character of work equipment, the account affected would be 308. But when this same bucket is placed in a

* Account Numbers refer to the accounts of the tentative classification dated Nov. 15, 1926.

station, account 376 is the proper place to charge the cost, and any fire protection that may be provided for snow sheds must be charged to account 209. If a donation is made to a local fire department the amount goes to account 468, while the cost of fire extinguishers and fire plugs is absorbed by a large number of primary accounts.

The expense of operating telegraph and telephone lines is included in some of the primary accounts under every general heading. Telephones, as well as the cost of telegraphing, is charged against the department benefited, and it is a very difficult matter to tell just what is the total cost of these services.

Commission Seems to Favor Cost Classification

Even though the primary accounts are not statements of costs yet it appears that the Interstate Commerce Commission inclines toward the idea that their ultimate purpose is to indicate costs.

In a letter addressed to the Railway Accounting Officers Association, Commissioner J. B. Eastman stated:

"Our classifications of operating expenses up to date have been primarily classifications of expenditures. Only in some instances have they approached cost accounting. The tentative revision follows the same plan. It may be that a classification of operating expenses on a satisfactory cost accounting basis is impracticable, but I am confident that the question is one which the Commission will be called upon to face. By a stipulation in paragraph (2) of Section 15 (a) of the Interstate Commerce Act, the rates which we prescribe as just and reasonable for the purpose of enabling the carriers to earn a just return are predicated upon honest, efficient, and economical management and reasonable expenditures for maintenance. Would a cost accounting classification of operating expenses afford a better basis for determining relative efficiency and economy of management and the reasonableness of maintenance expenditures?"

That the cost principle was incorporated in the recent revision of the classification may be noted from the following statement of Alexander Wylie, director of the Bureau of Accounts of the Interstate Commerce Commission:

"In the preparation of the classification of operating accounts it is planned to give very careful consideration to providing, so far as practicable, for the essential elements of cost accounting. It must be recognized, of course, that the proportion of directly assignable expenses in connection with the various classes of transportation is relatively small; that the proportion of these expenses which must be assigned upon a more or less arbitrary basis is relatively large as compared with most other industries."

The cost factors referred to here are the directly assignable operating costs and such indirect operating costs as may be apportioned without too much difficulty. It is not proposed that the individual operating expense accounts reflect the total cost of the operation or the service which they purport to include, for to do so would involve including in the individual accounts a proportion of general administration expense, depreciation, rents, and other overhead expenses.

The Difficulties Involved in Designing a Cost Classification

That the commission has not achieved this goal is ascribed to a number of reasons—the difficulty of devising a cost classification that will satisfy all interests, the almost impossibility of segregating cost items that such a classification would entail, the accounting costs of the apportionment and, finally, the question of the ultimate value of cost accounting in the railroad industry.

To attempt to make the classification of operating expenses a technically correct accounting cost classification would involve fundamental changes in the system of railway accounting as prescribed by the commission.

Scientific cost accounting is also handicapped by the physical nature of the railroad plant. For example, it would be an impossibility to segregate the maintenance expense of tracks between road and yard because of the joint use of such tracks for both road and switching service. The closest kind of supervision would be required to separate the labor costs of applying rails, ties, ballast, and other track material. The difficulty of having the accounts reflect the cost per mile of track maintenance for comparative purposes as between two railroads when one railroad is single tracked and the other double tracked, or perhaps four-tracked, is apparent.

To devise a classification of operating expenses based even on directly assignable costs involves numerous difficulties. Even could such a classification be devised, there is the question of its necessity—even of its value. That it is desirable in some cases cannot be denied, but to attempt to gather together in one classification the multitude of cost factors that enter into railroad operations and so segregate them that the accounts will reflect the costs of these operations, would involve such a mass of detailed accounting work that it is problematical whether the results would justify the effort.

Accounting Expense vs. Cost Classification

One of the chief objections to cost accounting in determining the cost of railway operations is the clerical expense involved in making the apportionments. For example, under the present classification it is necessary to segregate the pay of enginemen and trainmen, fuel, stores, lubricants, etc., relating to work trains and subdivide these expenses among the various "Maintenance" accounts on the assumption that such charges, added to the direct labor and material charged to those accounts, will constitute the cost of doing the work.

Even after this distribution is made, the expense of renewing ties does not include the cost of hauling the ties to the point where they are picked up by the work train and this expense is much larger than the work train expense delivering the ties to where they are to be used. For this reason, many accounting officers believe that the clerical labor of distributing the work train service serves no good purpose and contributes to an erroneous assumption as to the cost of the maintenance.

The committee of the Railway Accounting Officers Association working on the revision of the Operating Expense Classification recommends the elimination of work train expenses among the several primary accounts and suggests a new primary account styled "Work Train—Expense." It also recommends that the present method of distributing shop expenses and stores expense be changed and included in individual primary accounts as in the case of work train expense. By so doing the principal cost features of the classification would be eliminated and it would become largely a classification of expenses.

The reasons given for these recommendations are as follows:

"(a) The necessity of allocating such charges to other primary accounts, and the complicated distribution incident thereto is eliminated.
(b) The expense incident to such allocation will be avoided, and there will be released clerical help for more important duties, enabling prompt completion of accounting reports.
(c) A total of the expenses is immediately available and officers directly responsible will be in possession of information not readily obtainable under the present classification.
(d) The practice of charging expenses supervised by one department to other departments having no supervision over such expenses will be eliminated."

These reasons are based upon the two principal objections to a cost classification—the expense and difficulty involved in distributing such costs and the ultimate value of a cost classification to the railroad industry.

The expense and difficulty involved is really not a factor, although accounting officers like to dwell upon this phase of the situation. If the commission feels that a classification based on costs is essential, the question of the expense is going to have but small effect on the final decision. No government department, even the Interstate Commerce Commission, which has displayed exceptional broadmindedness in this respect, will be deterred from imposing a financial burden on an industry if it believes the public interest or even the interest of

the industry demands it. According to its reasoning the results will outweigh the costs.

If there is any doubt of the fact, witness the following statement of Commissioner Eastman on the subject:

"It has been represented that the accounting and statistical work required of the carriers under the present classifications is unduly heavy and expensive, and that contraction or simplification of the regulations is urgently needed as a means of relief. From this point of view, it seems to me, the test of the requirements is whether *they serve a useful public purpose?* Are they necessary in order that public regulation may be effective or that the public may be adequately informed as to the operations of the carriers? When the Bureau began work on the revision it was instructed to keep this test in mind and to prescribe the minimum of detail which experience has shown to be genuinely useful."

Many accounting statements are now furnished the Interstate Commerce Commission and railway managements by the accounting departments whose cost of compilation would have been prohibitive a few years ago. But such statements were deemed necessary and valuable and means were found to produce them more economically. The same applies to cost accounting. If it is necessary, and the results are of value, the expense involved will either be assumed or overcome and, if the latter, it will be because of the ingenuity and initiative of the individual accounting officer.

The Value of a Cost Classification

However, as stated, the question of expense is a minor factor. The real fundamental motive back of any cost accounting system is the value of such a system to the business or industry in which it attempts to develop costs.

Among industries, the purpose of cost accounting is primarily to secure definite figures upon which the selling price may be based. They also serve the further purpose of disclosing whether or not profits have been realized from the manufacture or sale of given commodities. They supply the starting point from which to conduct an investigation to determine why certain lines are not profitable, while others are. Labor material, operation, and maintenance costs are added to the fixed charges to produce the single cost figure which such purposes require.

But this is not primarily the purpose of cost accounting in the railroad business. As a matter of fact, the operating officer seldom gives a thought to costs from this angle. His cost figures are used for purposes of control. He wants costs to enable him to compile authoritative estimates, to compare his operations with similar operations of other divisions or of other carriers, to enable him to detect waste and eliminate inefficiency. The question of costs as a basis of rates he leaves to the traffic and legal departments to discover. And these experts know full well that the cost factor is but one of many that enter into the price that a railroad is allowed to charge for its services.

While it is not intended to enter into the acrimonious discussion of the relation of cost of service to rates, yet it does no harm to bring up the question of the value of such costs from this standpoint. Suppose it is discovered that it costs one carrier or all carriers six cents per passenger mile and the returns are only 3½ cents. Would this result be a very large factor in raising passenger rates 100 per cent or even a sufficient percentage to make a reasonable profit? Passenger rates based on costs have been tried out in England on several occasions with the result that the costs quickly outstripped the returns and to continue the process would have resulted in no passenger traffic whatever.

In a recent rate hearing in which the rates on grain in a western state were the subject of controversy it was openly acknowledged that the costs of operation were not even considered by the carriers in their arguments. The primary basis of the carriers' brief was the removal of discrimination as between different sections and the factor of costs was not introduced.

A railroad officer does not seek cost data on his dining car service for the purpose of enabling him to raise or reduce the cost of meals served to passengers. If he uses the cost figures in this way at all, it will be to enable him to tell his dining car patrons that he is giving them service that netted the company a loss of a quarter of a million dollars the previous year. What he wants is to discover if his loss is more than it should be as compared with other lines; to discover if certain cost factors are abnormal as compared with previous years, and to enable him to reduce expenses or discover leaks that might tend to reduce his loss, or perhaps turn the loss into a profit. The idea of using his cost figures simply as the basis of fixing his selling price is a minor factor, because the individual service given by a carrier is not based on costs.

From this it is plain that the purpose of cost accounting in industries; that is, to serve as a basis on which to fix the selling price, does not occupy the same importance in the railroad business. Therefore, to design an operating expense classification in which costs are the basis is to give an exaggerated and undue prominence to a minor purpose of the classification. It represents an attempt to supplant the well established practical uses of an expense classification with a theoretical use whose application has not even been proved practical or required in the operation of the business.

At the same time it cannot be denied that the factor of costs is assuming an increasing importance in fixing the returns which the carriers are allowed to earn which is due largely to the intent of recent legislation. Commissioner Eastman also aptly expressed the essence of this situation in a few words when he said:

"Cost studies are becoming more frequent in the process of rate regulation. So far they have chiefly been confined to terminal operations, but I have no doubt that they will soon be extended to the line haul also. In this connection I call your attention to the necessity of determining, under the present provisions of Section 4 of the Act, whether or not a rate is less than is 'reasonably compensatory.' Would a cost accounting classification afford a better foundation for such studies?"

The Accounting Officers' Views of the Purpose of the Classification

The fundamental operation principle on which the accounting officers believe the classification of operating expenses are based, including the principal purpose of the classification, has been well expressed by J. J. Ekin, comptroller of the Baltimore & Ohio in the following words:

"The nearer we can have the disbursements accounts reflect the current expenditures for labor, fuel, and material and supplies, the more useful the accounts will become as a check and record of these items of cost, and I strongly urge that the revised classification should show separately, with as few accounts as possible, the direct items of expense for labor, fuel, and material and supplies, the aggregate of which constitutes the cost of maintaining and operating the railroad properties. The accounts should afford a prompt and accurate method of controlling expenses represented by such disbursements."

This seems to represent the sentiment of accounting officers toward the cost features of the classification. Many have suggested that all cost aspects of the accounts be removed, as witness the suggestion that such items as work train expense, store expense, and similar costs be grouped together to form expense groups as any other expense accounts.

For railway operating purposes there is the further question of the value of cost figures, especially for purposes of comparison extending over a period of years. Their value is questioned because of the fluctuation of the unit of comparison employed—namely, the dollar. For example, if it cost $1.50 to renew a tie in 1927 and $1.00 in 1917, a comparison of these two cost units alone leads to erroneous conclusion. In fact, because of the fluctuation in the value of the dollar, a satisfactory comparison cannot be made even taking into consideration

the amount of fluctuation. A much more satisfactory basis of comparison in this case is the number of ties renewed per man hour; that is, the amount of work performed and the effort expended, leaving out entirely the monetary cost.

Even with a cost classification in use it would doubtless be found that each road, even individual officers on the same road, would continue to compile as they do now their own cost figures based, of course, on what the accounts reveal, but involving the additional work of combining and segregating amounts to suit the individual's idea of what constitutes costs for the purpose which the figures are to be used.

For example, if a roadmaster wished to measure the efficiency of his section gangs inserting ties in rock ballast, he would not include work train expense in distributing the ties. If a division superintendent wished to compare the costs incurred by the various roadmasters' districts performing similar work, he would doubtless include work train expense, but not the transportation costs of hauling the ties to the distribution point. If the management wished accurate cost data on tie costs, including costs of renewals, every item of cost, including the price of the ties, would be sought and these figures would not be found in any one account or even in any one classification.

The cost figures now used in railway operations, although they may be considered faulty from a technical accounting standpoint, serve their purpose of gauging operating results, of reducing expenses, of preventing waste, of increasing the efficiency of operations, and in general of assisting in the solution of problems which the management has to contend with. The question is, could a cost accounting classification serve these purposes as well?

From this analysis it would appear that the present operating expense classification should continue to serve its purpose simply as a classification of operating expense—a sub-division of the income account 531—Railway Operating Expenses—by primary causes of the expenditures, but that what it needed is a supplementary system of cost accounting or rules based on the present accounting system, but aimed to bring out uniform methods of ascertaining the costs of the principal classes of transportation services, operations, and manufacturing processes. These figures would then be available for comparisons between different carriers and for the purpose of fixing rates without infringing upon the long established uses of the expense accounts.

Modern Baggage Handling Methods in Japan

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended August 27 amounted to 1,109,225 cars, the highest figure for any one week to date this year, but a decrease of 19,338 as compared with the corresponding week of last year and of 15,213 as compared with 1925. Loadings of grain and grain products and also of miscellaneous freight were heavier but all other commodity classifications showed decreases as compared with the corresponding week of 1926. Coal loading declined 5,818 cars and ore 16,878 from last year's totals. The Pocahontas, Southern and Southwestern districts showed gains as compared with last year, but all other districts continued to show decreases. The summary, as compiled by the Car Service Division of the American Railway Association, follows in table form:

Revenue Freight Car Loading

WEEK ENDED SATURDAY, AUG. 27, 1927

Districts	1927	1926	1925
Eastern	250,396	257,421	262,733
Allegheny	222,092	227,578	224,949
Pocahontas	65,111	61,793	58,543
Southern	158,583	150,930	158,353
Northwestern	175,189	183,087	175,717
Centralwestern	155,370	166,700	159,268
Southwestern	82,484	81,054	84,875
Total West. Dists.	413,043	430,841	419,860
Total all roads	1,109,225	1,128,563	1,124,438
Commodities			
Grain and grain products	60,733	55,695	56,979
Live stock	30,199	31,166	31,741
Coal	195,128	200,946	211,768
Coke	10,078	11,699	10,307
Forest products	69,961	71,003	72,150
Ore	63,602	80,480	62,633
Mdse, L.C.L.	262,667	263,950	264,792
Miscellaneous	416,857	413,624	414,068
August 27, 1927	1,109,225	1,128,563	1,124,438
August 20, 1927	1,066,636	1,081,503	1,079,995
August 13, 1927	1,049,280	1,102,660	1,064,476
August 6, 1927	1,024,218	1,075,392	1,052,518
July 30, 1927	1,045,621	1,095,997	1,045,626
Cumulative total, 35 weeks	34,511,482	34,611,028	33,595,008

The freight car surplus for the period ended August 23 averaged 238,655 cars, as compared with 245,291 August 15. The total included 65,728 coal cars, 135,735 box cars, 18,601 stock cars and also 11,910 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended August 27 totalled 64,059 cars, an increase of 695 cars over the previous week and an increase of 3,077 cars over the same week last year.

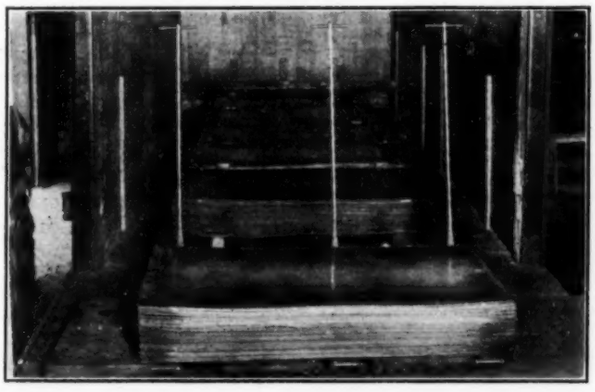
	Total for Canada			Cumulative totals to date	
	Aug. 27,	Aug. 20	Aug. 28,		
Commodities	1927	1927	1926	1927	1926
Grain and grain products	3,835	3,539	4,794	224,168	215,655
Live stock	2,910	2,502	2,406	68,052	68,589
Coal	7,151	7,724	6,948	221,417	177,950
Coke	337	295	352	10,580	12,455
Lumber	4,465	4,364	3,863	128,791	124,609
Pulpwood	1,940	1,605	2,230	116,959	97,978
Pulp and paper	2,007	2,141	1,974	75,777	82,905
Other forest products	2,744	2,700	2,560	104,002	107,269
Ore	2,018	1,936	2,116	54,446	56,681
Merchandise, L.C.L.	18,520	18,488	17,911	578,592	547,771
Miscellaneous	18,132	18,070	15,828	487,225	468,831
Total cars loaded	64,059	63,364	60,982	2,070,009	1,960,693
Total cars received from connections	38,172	36,525	38,749	1,288,369	1,264,870

Sheet Metal Loaded by Cranes and Dollies

THE Roura Iron Works, Detroit, Mich., has developed a type of dolly which when used in conjunction with cranes reduces the labor required in loading or unloading sheet metal in cars. The equipment consists of an adequate number of midget lift trucks or dollies, some transfer dollies and a crane. The sheet metal is moved to or from the car door by a crane. If the steel is being loaded, it is deposited in piles of from eight to ten inches high on transfer dollies or roller platforms standing on a steel gangway which extends from the car to a point six or seven feet back from the edge of the loading dock. The gangway is pierced at intervals with holes in which those who move the load may find purchase for their bars. The steel is moved into the car on these dollies and is then transferred to lift dollies, which may be elevated from three to five inches with a single motion of a long handle which one man can operate. After the steel is lifted from the transfer dollies by the lift dollies, it is moved over strips of steel which form a trackway to its position in the car.

Method of Stowing Changed

Under the former method of stowing sheet metal for shipment, the metal was placed in piles, running lengthwise of the car, and a formidable framework of lumber and spikes was built against and around it. Under the new method, the steel is placed crosswise on stringers of four-by-four-inch lumber laid lengthwise of the car. The car is filled with these piles, except for a space of five feet opposite the doors. In this space a box-like



Transfer Dollies Carry the Metal Into the Car—Lift Dollies Elevate and Transport It to Its Position in the Car

structure separates the piles on each side. Two-by-four-inch spaces are provided between piles with wedges which take up the slack in transit. As the gaps between piles are widened by impacts encountered on the journey, the wedges slip further down, thereby tightening the load. The danger of buckling has been overcome by extending the box-like mid-portion of the structure beneath the piles on each side. No spikes are used on the stringers and no spikes are driven into the walls or floor of the car. Consequently the lumber used in bracing the load under the new method may be reused.

Time and Labor Reduced

The Ford Motor Company which is now employing this method has experienced a saving in both the time and labor required in loading and unloading cars. Previous to its adoption, loading and unloading consisted in carrying two or three sheets at a time into or out of the car. The size, weight and flexibility of the material was such as to require two men to handle each sheet and four men were employed four hours in unloading a 50-ton car. Under the present method, three men are able to unload a 50-ton car in one hour, which is a saving of 13 man-hours. It has also been found that the amount of material damaged in handling has decreased almost to nothing.

General Foremen Meet at Chicago

THERE were 135 members registered at the opening day's sessions at the twenty-first annual convention of the International Railway General Foremen's Association which was held at the Hotel Sherman, Chicago, September 6 to 9 inclusive. Addresses were delivered at the first day's sessions by Samuel O. Dunn, editor of the *Railway Age* on "Supervising Officers and Railway Efficiency" and by O. A. Garber, chief mechanical officer, Missouri Pacific on "Engine Handling at Terminals." Other addresses at later sessions were delivered by T. W. Demarest, general superintendent motive power, Pennsylvania; A. C. Mann, vice president, Illinois Central; W. Wymer, C. & E. I. and G. F. Hess, superintendent motive power, Wabash.

In speaking on the part the supervising officers play in controlling the efficiency of railroad operation Mr. Dunn said that, "in the long run, the ability of industry in general, and of the railroad industry in particular, to pay increasing average wages, depends upon increasing the total earnings of industry per man employed, and that this in turn depends in the long run largely or mainly upon enhanced efficiency resulting in increased average output per employee. The situation in the railroad industry is much the same as in other industries, excepting that the railways are earning a smaller percentage of return on their investment than most other industries.

"In the year 1926 the total earnings taken in by the railways for each person employed by them were $3,581. This is the average wage that each employee would have received if the total earnings from freight, passenger and other business had been equally divided among all the employees. Why cannot all the earnings made, or at least a larger part of them, be paid to the employees? Few persons seem to know the answer to this question, but facts regarding the railroad business make it easy to answer. The average wage paid to all employees was $1,645. Of this $122 was paid from capital that was invested last year and $1,523 was paid from the year's earnings and charged to operating expenses. What was done with the rest of this $3,581? For locomotive fuel there was paid out of it $229, and for materials and supplies used chiefly in maintenance, $681. You can no more run a railway without fuel for locomotives, and materials and supplies for maintenance, than you can run it without employees. There was paid out of it $58 for loss and damage to freight, injuries to persons and insurance, and $130 for depreciation and retirements. These, again, are operating expenses that are as unavoidable as wages. There was paid out, for each person employed, $218 in taxes. The railways have, of course, no control over the taxes they must pay. There

was paid for each person employed, $62 for hire of equipment and rentals of joint facilities.

"These figures account for $2,900, or 81 per cent, of the $3,581 of earnings taken in by the railways per person employed by them. If the government owned the railways, or if the employees themselves owned them, these, or probably even larger, expenditures for fuel, materials and supplies, etc., would all have to be made, and, therefore, none of the earnings used for these purposes could be used in paying higher wages.

"There remained, after these operating expenses and taxes had been paid, $681 of earnings per employee. This is called 'net operating income,' and was used for paying interest on the debts of the railways, and dividends on their stock, and in making improvements. The investment in the property of the railways for each person employed by them was $13,330 and, therefore, this net operating income amounted to a return of only 5.11 per cent on the investment. Payment must be made for the use of capital if investors are to be induced to invest it in the railroad business, and certainly 5.11 per cent is a very modest return to be earned on investment in a year of record-breaking freight business such as 1926. The average return earned on the investment in the railroad business in the last seven years has been only 3.69 per cent.

"It follows that, in the long run, there are only two ways in which higher wages can be made possible. One of these is by increasing the total earnings of the railways per employee, either by increasing the average amount of traffic handled per man, or by getting higher freight and passenger rates from the traffic handled. The other is by effecting economies in the use of fuel and materials and getting reductions in taxes in order that a larger part of the total earnings may be available for paying wages. It necessarily follows that the average wage the railways can pay their employees depends upon the kind of regulation they receive and upon the efficiency and economy with which they prove to be operated.

"In point of efficiency our railroads will easily bear comparison with our other industries. It is highly significant that while the average wholesale price of all commodities is now 80 per cent higher than 37 years ago, the average yearly wage of railway employees about 230 per cent higher and their average hourly wage almost 300 per cent higher, the average rate received by the railways for the transportation of freight is only 14 per cent higher. Only by a vast investment of capital, and by increases in the efficiency and economy of operation probably unequalled in any other large industry have the railways succeeded in paying these greatly increased average wages, rendering their service to the public and earning comparatively small returns for the owners of their securities in spite of this comparatively very small advance in their average freight rate."

Discusses Engine Handling

Mr. Garber, in discussing the subject of engine handling at terminals, laid particular stress on the necessity of thoroughly analyzing engine terminal conditions with a view to providing facilities that will permit the turning of locomotives with a minimum of time and expense. The co-operation of foremen, employees and between mechanical and transportation officers is, Mr. Garber said, of greatest importance in the efficient handling of power. "All officers should encourage employees to report defective conditions coming to their attention, which have not been reported, also to encourage the men to advance ideas and other information that may be of benefit to the railroad. A sweeper or a laborer will sometimes call attention to some important item that others may have overlooked." Mr. Garber also said: "Another important subject is the design of new equipment. Mechanical engineers should give consideration to the accessibility of the various locomotive parts and the convenience with which repairs may be made in enginehouses and shops. It is well known that the parts of a locomotive which are hard to get at in repair work are neglected and as a result give considerable trouble due to running hot and consequent failure. Some improvements that are proving beneficial are: main frames, side and main rods, piston rods and valve motion parts made of alloy steel; long piston rods in order that cylinder packing may be renewed without extracting the piston rod from the crosshead; floating bushings in the back ends of main rods as compared with strap brasses. Consider the time it takes to make and fit a strap brass as compared with turning a floating bushing. Also, floating bushings are desirable in the middle connection of side rods. With a pressed bushing it is necessary to remove side rods from the locomotive while with floating bushings the renewal can be made without the necessity of removing the rods. It has been proved that a chilled brass may be used for floating bushings that will further increase the service a brass will give before it is necessary to be removed. The success of the floating bushing in main and side rods is largely dependent upon the proper method of lubrication. Other improvements are those in boiler design and construction such as flexible staybolts, thermic syphons, brick arches and the electric welding of flues. Constructing a locomotive with the thought in mind of ample strength and accessibility and convenience for making repairs will be reflected by the saving of time in the turning of power and a lower maintenance cost."

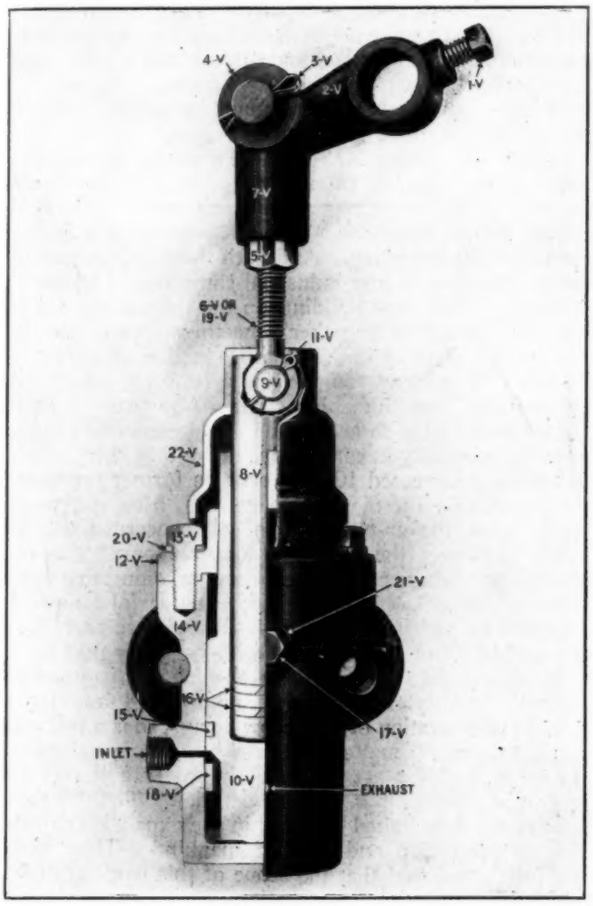
Election of Officers

The following officers were elected to serve during the year 1927-28: President, F. M. A'Hearn (Bessemer & Lake Erie); first vice-president, J. H. Armstrong (A. T. & S. F.); second vice-president, H. B. Sunderman (Hocking Valley); third vice-president, A. H. Keyes (Baltimore & Ohio); fourth vice-president, C. Y. Thomas (Kansas City Southern), and chairman executive committee, C. A. Barnes (Belt Railway of Chicago), the retiring president.

Trainmen's Locker Room, Chicago Union Station
Separate Lyon Metallic Cabinet Provided for Each Crew

Vacuum Type Bell Ringer on Market

A VACUUM type of bell ringer has recently been placed on the market by the Viloco Railway Equipment Company, 14 East Jackson boulevard, Chicago, designed to prevent the bell from revolving and maintain the swinging bell which has the desirable feature of throwing the sound the greatest distance.



The Viloco Vacuum Type Bell Ringer

Action of Piston

Pressure is admitted through the inlet opening underneath piston *10-V* and the piston is forced upward, drawing the valve ring *18-V* with it until the valve ring closes the inlet port and opens the exhaust port. The bell, having received an impulse, continues on its upward motion, but is smoothly and gradually cushioned and stopped by the vacuum formed by plunger *8-V* pulling out of piston *10-V*. The impetus thus having been expended, causes the bell to fall and returns the plunger and piston to their normal positions, closing the exhaust port and opening the air inlet for the following impulse.

This type of bell ringer eliminates the use of a bar across the top of the bell yoke or any other contrivance which is applied to prevent the bell from making a full revolution.

Welfare and Safety

W. H. JONES, assistant director, safety and first aid, Canadian National, spoke on the subject of welfare as applied to safety at the recent meeting of the Steam Railroad Section of the National Safety Council in Detroit. An abstract of his remarks follows:

The terms "welfare" and "safety" are sometimes used synonymously in speaking of those agencies which aim for the betterment of mankind, and they are often regarded as being joined together in the formation of a worthy human destiny. But technically speaking "welfare" is simply a condition, while "safety first" is action. "Safety in action" is one of the flowing rivers that enter the vast ocean of human welfare.

We have three important truths which are worthy of our attention:—(1) That welfare is based upon the safety of the individual; (2) that welfare in its nature is social consciousness; (3) that welfare in its scope is co-operation of all concerned.

It is absurd to ever expect to build an industrial state of safety or welfare in its entirety apart from a specialization on the value of the individual who constitutes that aggregate. The larger the group or the social unit of employees, so much harder it is to recognize the value of the individual or single constituent of that group. In a world with its supply of man service larger than its industrial demand it is an easy matter to lose our admiration for the single life. For when numbers exceed the need the single unit is oft obscured. Individual value is lost in the vastness of the group.

The secret of a successful welfare must be built upon the truth of the value which is attached to the individual. I do not mean that the foreman only knows his single members in the gang but that even the general superintendent may inherit a goodly portion of this gift of personal acquaintanceship with those who form the working unit of all departmental groups. When you touch men as individuals and not as mechanical units you have produced mutual relationships, and these are the basic principles in any industrial safety or welfare. When industry has lost that qualification it has suffered an irreparable loss of its soul. Before you get the best out of man's strength you must enter his heart and soul. This is not exactly charity but conformity to human justice. To say that a business concern has no sentiment is more of a callous "foolosophy" than a practical "philosophy." I think there is more concerned than dollars and cents in the matter of industrial accident prevention that brings us to a worthy welfare. At any rate an approach to our employees must be along humanitarian principles. For one of the deep-seated instincts that sways normal men is not so much loss in material production as it is a repulsion from personal pain and suffering. This is the key that opens the door to the heart and head, sentiment and consciousness of our employees. And when you have successfully entered a man's heart you will soon be able to govern his conduct. Welfare deals with human values and saves them from being subordinated or foolishly slaughtered. The greatest capital entrusted to industry is its man-power and everything must be measured by a standard of human values.

Welfare in Its Nature Is Social Consciousness

While the basic principle in welfare is individualistic, the nature of it is entirely social. The individual now removes the shackles of self-aggrandizement and launches out to aspire for the welfare of the whole group. In other words he now begins to live for others. He

"loses himself" so has to find himself in others. The self-conscious attitude is replaced by a social consciousness. The fault-finding tendency of his past selfish and small world has now been replaced by happiness and contentment of his larger world and sphere. The bane of human life today, you say, is discontent, but 99 per cent of that discontent in society, whether industrial or national, has been due to some individual culprit who has tried to squeeze the interests of the whole group into his own selfish desires and thereby the vision of true welfare has been lost by the glare of limited safety. For, after all, safety is but a physical protection while welfare assumes a psychic adjustment. It is generally conceded that a large majority of our accidents today can be traced to these psychic causes.

Safety is a science. It must be approached as such and especially by those engaged in its application. You cannot prove its truth by reading arguments or concocted committee reports. For it is not a matter of truth and falsehood only; it is a matter of life and death. Hence we must acquaint ourselves with causes and not mere effects only, in applied safety. Its mission is to construct a bridge from the past, with its cripples and sightless, to the future, with its perfect men; strong of body and resourceful in mind. To do this is a gigantic task which will tax the very best of human knowledge. The subject of the care and protection of men in all its varied forms of welfare and safety is gradually restored from illiterate hands and placed in charge of intelligent and competent leaders. It must have guided and trained efforts—organized knowledge. The day is past when any company will entrust the care of this important work to certain members of its personnel because it has nothing else to offer them. This branch of a railway enterprise, I say, is too important to be managed by only those who are inadequately trained. Perhaps the tendency of our various railways in the past has been to look rather suspiciously upon the college trained man and become rather prejudiced against education. But the railroads of tomorrow as far as this subject is concerned must and will demand the best that training and education can supply.

Plainly enough the man in charge of industrial welfare and safety must possess qualifications that border against the visible dangers of machinery but also to erect barriers against invisible and destructive influences that attack both heart and mind. He must be able to demand goggles against foreign elements that insist on destruction of eyesight but he must also be qualified to construct a protective screen against intimate motives that insist upon destruction of uplifting visions. So that if welfare and safety are to attain their true objective, then, the man in charge must be both a psychologist as well as an engineer. It is a gigantic task and we have done well with the physical phase of it but I am not sure whether as yet we have launched intelligently into the psychical aspect of it.

But the need of the hour is for an enlarged vision, a vision of safety that can foster not only accident prevention of human bodies but also accident prevention of human minds. The task is big but not too big to be accomplished.

The very essence of welfare as applied to safety is action—"To do"; co-operation of all the various agencies for one common end of welfare.

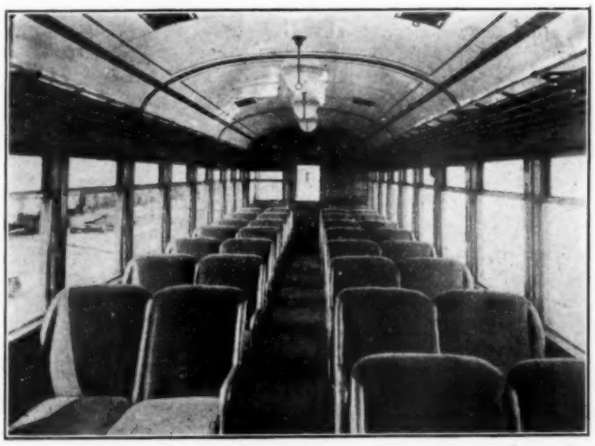
First Aid—This is one of the most important cornerstones in the architecture of welfare. On the railroad to which I belong the safety department is inseparably attached to the first aid. They both work together, as they should, and to my mind it is impossible to perpetuate a 100 per cent safety policy if it is separated from its ally, the first aid.

Dental Clinic—If it is true—according to the contention of the medical science—that mostly all ills and diseases originate in the teeth, then the establishment of such a clinic would prove beneficial to any industrial concern. How elaborate a scale on which we should adopt this is not for me to say. This is simply mentioned as one of those social agencies that formulate a real welfare in industry.

The Visiting Nurse—Such an appointment can be a very beneficial one to any company. A nurse who knows when and how to enter the homes of our employees could be productive of much good and bring about a great deal of comfort and assistance to many a sorrowful and helpless home. But such a nurse must be tactful. For a flippant visiting nurse can do much harm.

Athletic and Social Activities—These are worthy activities when operated efficiently, for they help to promote an "esprit de corps" among employees. Physical training builds health and strength while social events produce good fellowship. And both these factors are of inestimable value to any industrial company. I know of nothing so valuable in building up the morale of men as these social or "get together" meetings. And on the other hand I know of nothing so productive of increased business to a railroad company as a properly conducted "get together" meeting. For after a few years' experience in charge of such activities I could enumerate many instances, especially in competitive towns and cities where the company increased 100 per cent its former business.

In conclusion these various agencies, after all, must depend upon the co-operation of all concerned. It is absurd to expect the company to shoulder all the responsibility. There must be a social awakening that each employee is a spoke in the wheel of a successful company. The one-man safety or the single-life welfare carry but little weight. But each railroad with its safety unit must realize that it is a piecework in the fabric of universal welfare. Just as the individual man is helpless apart from the co-operation of his fellow beings, so is a railroad in this respect. It matters not how keen the competition may be in business activities but in safety and welfare there must exist all possible co-operation. The railways of today are now linked together in the expansion of this work of protection and care of mankind. They have been fully convinced that the scope of this work must be accomplished through co-operation.



Individual Bucket Type Seats Used on the Chicago, North Shore & Milwaukee

Wabash Has Low Record for Engine Failures in June

DURING the month of June, 1927, the Wabash broke all its previous monthly records in the number of engine failures on its lines when it made a total of 558,384 miles per engine failure in freight service and 125,873 miles per failure in passenger service. This beats its previous freight service record of 297,487 miles which was made last May by

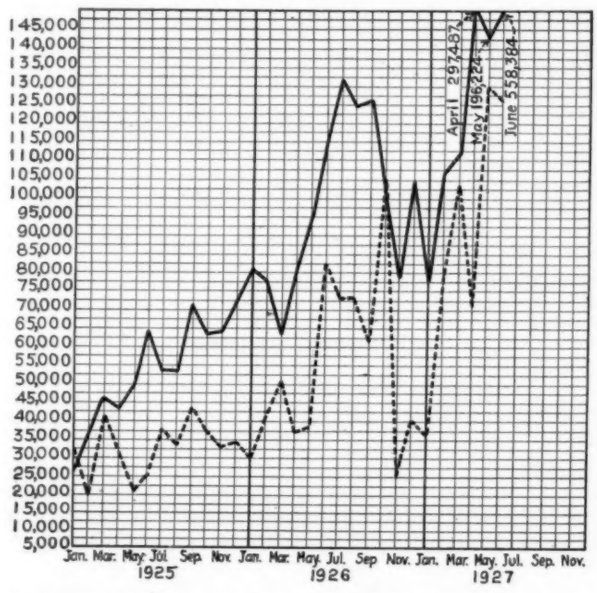


Chart Showing Miles Run per Engine Failure on the Wabash Since January, 1925 (Full Line, Freight; Broken Line, Passenger)

260,897 miles, or nearly 47 per cent. Out of 113 locomotives assigned to passenger service during the month of June, the Wabash had only four failures and, in freight service, only two failures out of a total of 576 locomotives assigned. The total locomotive mileage made in passenger service during that month was 503,490 miles, while 1,116,768 locomotive miles were made in freight service. This record is a considerable improvement over that of June, 1926, when there were six passenger locomotive failures in a total of 119 locomotives assigned and 10 failures in freight service in a total of 587 freight locomotives. The total passenger locomotive mileage for June, 1926, was 495,119 miles and the total freight locomotive mileage was 1,142,583 miles.

The improvement that has been made in reducing the number of engine failures on the Wabash since January, 1925, is well illustrated in the chart which shows the number of miles run per engine failure in both freight and passenger service.

The Wabash uses practically the same definition of an engine failure as recommended by the Mechanical Division, A. R. A., namely, that all defects on a locomotive which result in a delay of 5 min. or more in passenger service, 20 min. or more in time freight service, and 30 min. or more in continuous movement and ordinary freight train work and switch service, are considered engine failures. A failure is cancelled if the time lost through an engine failure is regained without causing delay at the terminal, a meeting point, or to other traffic. Failures are not considered when the delay is due to causes other than the condition of the locomotive, on locomotives coming from outside points to the shops for repairs, or on locomotives making a trial trip after having received shop repairs. Switch and work train failures are shown in the freight engine failure figures.

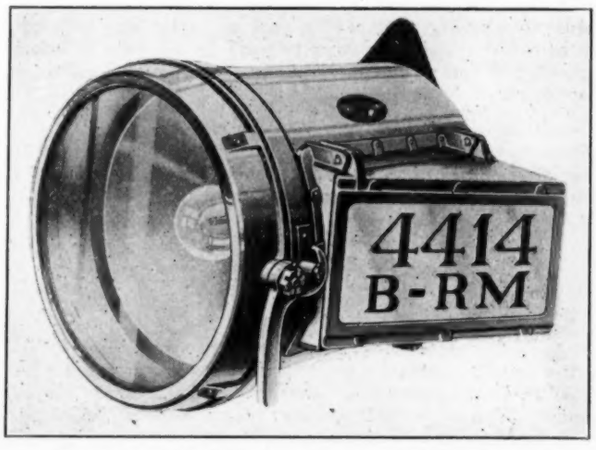
Headlight With Bright-Metal Case

A LOCOMOTIVE headlight in a polished metal case has been manufactured by the Sunbeam Electric Manufacturing Company, Evansville, Ind., to conform with the present trend of distinctive locomotives used on important trains. The Boston & Maine locomotives used for hauling "The Minute Man" are equipped with these headlights. The locomotives which are finished in color with polished motion work and cylinder head casings were described briefly in the *Railway Age* of July 16, 1927.

The entire surface of the headlight is polished, the case being made of rust-proof steel with aluminum and nickel-plated brass fittings. The mounting plate for securing the headlight to the smoke box is at the back of the case, the usual bracket being omitted.

Will Retain High Polish

The case and back of the headlight are made of 16 gauge, polished rust-proof steel which the manufacturer states will retain its high polish indefinitely. The mounting plate is ¼-in. triangular-shaped boiler plate, painted black. Regular mounting legs can be furnished if desired. The front door is of polished cast aluminum with jute packing between the door and case. The front door latch is a nickel-plated brass casting with adjustment to compensate for packing shrinkage. Front door



Rust-Proof Headlight Used on Boston & Maine Locomotive

hinge pins are also nickel plated brass, so arranged that the door can be removed from the case. The side number frames and doors, hinged at the top, are made of polished cast aluminum with jute packing between frame and door and cork packing between door and glass. A 14 in. glass reflector is used. The focusing device has universal adjustment and the terminal screws are attached to a plate mounted on the side door frame.

Looking Backward

Fifty Years Ago

Another use was found for the telephone recently when communication was opened between the locomotive and the rear car on a New York Central train. Ordinary conversation was heard, in spite of the noise of the moving train. The telephone would be quite useful on trains if it did not require a corps of electricians to operate it.—*Railway Age*, September 13, 1877.

The Chicago & Alton has placed in service on its Chicago-Kansas City line a passenger car fitted with reclining chairs. They serve well in the place of sleeping-cars for persons riding only a short distance at night. The chairs can be adjusted to sitting, reclining or horizontal positions, with rests provided for the feet, limbs and head.—*Railway Age*, September 13, 1877.

An invention known as a track laying machine has just been placed in operation on the Brainerd cut-off of the Northern Pacific. It consists of a succession of rollers set in movable frames attached at will to the sides of several flat cars in a train, elevated so as to afford an inclined plane from rear to front. Upon these the ties on one side and the rails on the others are delivered to the tie and track layers working on the newly finished grade.—*Railway Age*, September 13, 1877.

Twenty-Five Years Ago

H. T. Bentley, master mechanic of the Iowa division of the Chicago & North Western at Clinton, Iowa, has been appointed assistant superintendent of motive power and machinery, with headquarters at the Chicago shops.—*Railway Age*, September 12, 1902.

On September 2 the Railroad Commission of Texas issued an order, to take effect the following day, requiring the St. Louis & San Francisco, and a number of affiliated roads, to reduce all their freight rates 20 per cent.—*Railroad Gazette*, September 12, 1902.

The Pennsylvania has planted at Newton Hamilton, Pa., 15,000 locust trees as an experiment in growing tie timber. It is estimated that it will require about 15 years for the trees to acquire suitable size for tie timber.—*Railway and Engineering Review*, September 13, 1902.

A traffic arrangement has been made whereby the Denver gateway of the Union Pacific, which has been closed to other lines since 1896, has been opened to the Chicago, Rock Island & Pacific and the Chicago, Burlington & Quincy.—*Railway Age*, September 12, 1902.

Ten Years Ago

Practically all arrangements have been made by the railroads for beginning on September 5 the transportation of the 687,000 men who will constitute the first unit of the new National Army from the 4,531 concentration points to the 16 cantonment training camps. With the 300,000 members of the National Guard who must be transported to training camps, this will place upon the railroads the task of moving nearly 1,000,000 men within the next few weeks.—*Railway Age Gazette*, September 7, 1917.

A peculiar significance attaches to the appointment of W. D. Robb, superintendent of motive power of the Grand Trunk, as vice-president in charge of motive power, car equipment and machinery. These trying times are demonstrating beyond question the importance of equipment problems. No one knows better than the mechanical superintendent the tremendous losses suffered by the policy of changing mechanical department appropriations with every fluctuation in earnings.—*Railway Age Gazette*, September 7, 1917.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Minerals and Mining Industries in the Areas Served by the Canadian National Railways, by C. Price-Green. Handbook for persons interested in development now and source material for economic historians. 132 p. Pub. by Department of Natural Resources, Canadian National Railways, Montreal. Apply.

Pre-cooling vs. Transit Icing, by R. L. Wheeler. Results of experiments made in transportation of fruits. Transportation circular No. 43. 3 p. Pub. by Fruit Branch, Department of Agriculture, Ottawa, Canada. Apply.

Through the Heart of the South to Florida. Expansion of Seaboard Air Line in recent years told in manner that makes the publication valuable as both railway and economic history. 43 p. Pub. by Dillon, Read & Co., New York. Apply.

Periodical Articles

The Collection of Current from Overhead Contact Wires, by R. E. Wade and J. E. Linebaugh. Results of tests made on East Erie Commercial Railroad. Illustrated. General Electric Review, September, 1927, p. 432-442.

Locomotive Development on British Railways, by Charles R. King. Comparisons and contrasts between British and American locomotive design, with design on the continent of Europe, that are apt to provoke controversy. Modern Transport, August 27, 1927, p. 5-6.

The New Harvest Hand, by Henry J. Allen. Description of the combine harvester and the changes it has made in wheat harvesting, to say nothing of transportation service in the states in which it is used. American Review of Reviews, September, 1927, p. 279-284.

Railroad Bonds and the Future, by L. A. Downs. The president of the Illinois Central discusses the background for confidence in railroads. Savings Bank Journal, September, 1927, p. 9-11.

Transportation, by A. W. Somerville. A story in which freight service, engine failures and grape-fruit are involved. Saturday Evening Post, September 5, 1927, p. 15, 110, 112, 117.

Missouri Pacific Café-Club Car—"Hot Springs Special"

Odds and Ends of Railroading

The *Railway Age* receives many inquiries for information. Most of the questions concern railways and, consequently, can generally be answered. Occasionally, however, one comes along which is slightly out of our alley, as the saying goes. For instance, the writer of a letter now before us wants to know where he can buy "an outfit for making waffles—one suitable for fairs, carnivals, etc."

A Long Island commuter recently wrote to the railroad complaining about the use of smoking cars by women—threatening, unless something were done about it, to take to riding the locomotive tender. The road's reply to this misogynist evidently leaves him no recourse but to make good his threat, the official attitude being that smoking cars were provided for all persons regardless of sex who prefer such environment and that the railroad could not discriminate.

For one of the oddest railway titles, may we nominate W. M. Anderson, who is assistant clerk for the Southern Pacific at Anchorage, Ky. His headquarters are also somewhat odd, since Anchorage is a small town just outside of Louisville, Ky., and nearly a thousand miles from the nearest point on the Southern Pacific. This rather peculiar title and headquarters is brought about by the fact that the Southern Pacific is incorporated under the laws of the state of Kentucky and by these same laws is required to maintain an office in that state.

The proposed championship fight between Gene Tunney and Jack Dempsey attracted railway interest recently when it was announced in the press that the sale of seats would probably be conducted in railway ticket offices throughout the country. It is not generally known, however, that one of the participants was formerly a railway man. Tunney, the champion, worked for some years in a railway office in New York, starting as messenger and being promoted to rate clerk. He held this position until he enlisted in the Marines, when his boxing career began.

Probably the only railway in the country which is in three widely separated pieces is the Colorado & Wyoming. The northern division of this line extends from Guernsey, Wyo., to Sunrise, 6.8 miles, with 6.9 miles of spurs and sidings. The middle division consists of 84.6 miles of spurs and sidings in the vicinity of Minnequa, Colo., which is 360 miles from Guernsey by the shortest rail connection, while the southern division comprises 31.4 miles of main line between Trinidad, Colo., and Tercio, with 28.3 miles of spurs and sidings, Trinidad being 96 miles from Minnequa by the shortest rail connection.

A motorist in New York State recently grew tired of traveling on the crowded highway and turned his car off on a railroad right-of-way. Bumping along on the ties for a mile or so he came to a siding and turned off on it. In turning off he sprung the switch which set the block signal behind him in the stop position. A train came along and was stopped at the signal. Investigation ensued which disclosed the motorist in his car on the siding, fast asleep. Imitation is the sincerest flattery, but we are not told whether this particular case developed from sane enthusiasm or was induced by overeating—or perhaps some other festive excess.

The Baltimore & Ohio Magazine has conducted an interesting survey of names of employees on that line and, as a result, inquires in the July issue: "Do the John Smiths Run the Railroad?" There are 52 John Smiths working on the B. & O. What do these John Smiths like to do? Braking seems to hold the strongest urge—there are five brakemen John Smiths. Then there are four trackmen and four yard employees, three machinists, three laborers, two agents and two clerks, two engineers, two pipefitters, two truckers. The others run to jobs of the yard and the shops, with few exceptions. Only six hold inside or office jobs; the rest are in the shops, the yards, in warehouses and at crossings.

Some men have marble shafts erected in their honor after they are dead, but two men on the Louisville & Nashville say that they much prefer recognition while they are still alive. The men are Andy Doyle, conductor, and Jefferson Holloway, engineman, who are employed on a commuter train which runs between New Orleans, La., and Ocean Springs, Miss. Everyone along the Gulf Coast knows this train, which is called locally "The Jeff," after the popular engineman. Engineman Holloway has been on the run for 32 years, with conductor Doyle as a companion for 19 years. The engineman has had 44 years' service in all, while the conductor is a veteran of 37 years' service.

As an exhibit in the collection of railroad incidents that might have been picked from the scenario of a Western movie thriller we submit the experience of J. D. Ferguson, towerman at the Ft. Worth & Denver City-Frisco interlocking tower at Vernon, Tex. The Houston Post Dispatch credits him with foiling a holdup of the Amarillo passenger train just before dawn on July 8. When three masked men knocked on the tower door as the passenger approached, poking a revolver through a window to enforce their demands that the train be stopped at the crossing, Ferguson cleared the signals. He was kicked and beaten into unconsciousness but his punishment served a useful purpose for the train proceeded to Amarillo, the crew oblivious of the attempt at robbery.

Solving the Labor Turnover Problem

W. S. Wollner, who is in charge of personnel for the Northwestern Pacific has devoted 25 years to a study of labor turnover in the maintenance-of-way department and means of reducing it. There is one section on his road where turnover is rare and while visiting it recently, he asked the Italian foreman the reason. He answered in two languages, viz. broken English and profane. The broken English part of his reply was as follows:

"It's easy! I catch young Italian and give him job. Then I see he marry good Italian girl and then he has to work like —— for rest of his life. He can't quit job."

Widely Divergent Sources of Varnish

A high-grade railway coach-finishing varnish generally contains Kauri gum from New Zealand, Congo gum in small quantities from Africa, Ester gum or rosin from the pine trees of Louisiana esterfied with glycerine, a by-product of the soap industry. Linseed oil pressed from flaxseed of the Argentine or northwestern part of the United States and China wood oil from southern China are the two principal oils used. Litharge and red lead, used as dryers, are made from metallic pig lead mined in western United States. Manganese from Caucasia, cobalt from South America and zinc from Franklinite deposits in New Jersey may also be used as dryers. Turpentine from the Carolinas and naphtha, a distillate of petroleum, are used. From these raw materials, gathered from every corner of the globe, the varnish manufacturer makes coach varnish which is used to protect and beautify railway coaches.

Piedmont & Northern Has a Black List

An interesting and unusual letter is employed by the Piedmont & Northern in its efficiency campaign. The letter follows:

The Piedmont & Northern Railway, freight claim committee, wishes to notify all concerned of the resignation of the following characters in the event they are later found to have appeared on other railroads. Please post these names, as they are dangerous characters and should not be allowed on the right-of-way if loss and damage claims are to be cut in half, which can be done:

M. T. Head,
E. Z. Worker,
Bill M. Wrong,
Load M. Hasty,
I. M. Careless,
N. O. Marks,
Lee K. Roof.

NEWS *of the* WEEK

A B. & O. Train on the C. N. J. at Roselle, N. J.

HEARINGS on the demands of the train dispatchers of the Louisville & Nashville for increases in wages were begun before an arbitration board on September 1.

New York Railroad Club Meeting

The New York Railroad Club will hold its first monthly meeting of the 1927-28 season at 8 p. m. on September 16 at the Engineering Societies' Building, New York. T. C. Gray, supervisor of apprentices of the Missouri-Kansas-Texas, will present a paper on Railway Trades Training and S. L. Rothafel, better known as "Roxy" of radio fame (in person), will address the club.

Specifications for Railroad Track Scales

In an effort to foster further improvements in weighing conditions, not only in the transportation industry but in other branches of commerce, the Bureau of Standards has issued Circular No. 333 containing specifications for the manufacture and installation of two-section knife-edge railroad track scales. The detailed work of preparing the specifications was done by the Yards and Terminals Committee of the American Railway Engineering Association, on which the railroad and manufacturing interest and the Bureau of Standards were represented. The specifications also bear the approval of the National Scale Men's Association and the Scale and Balance Manufacturers' Association.

Coal and the Norfolk & Western Railway

"Coal and the Norfolk & Western Railway" is the title of a pamphlet, handsomely illustrated, which has been issued by the Coal Traffic Department of the Norfolk & Western (Roanoke, Va.) describing the coal mines which are situated along the lines of that road—low volatile, high volatile and semi-anthracite—with information about the facilities of the road for transportation of the coal and its delivery to vessels. Coal was mined in Virginia on a small scale as far back as 1750 and it was considerably used prior to the revolutionary war. The renowned Pocahontas district, however, was not developed until 1881. The Norfolk & Western was completed to that region in 1883. The book has a large scale folding map of the Virginia, West Virginia and Kentucky coal mines tributary to the Norfolk & Western.

Railroad Taxes $44,730 An Hour

The gross revenues of the Class I railroads of the country for 1926, stated in averages for the 8,760 hours in the year, are given in a statement which has been issued by the Committee on Public Relations of the Eastern Railroads.

The gross receipts of these roads for the year ($6,451,148,000) amount in one hour to $728,251. One hour's wages aggregate $336,632. Other operating expenses in one hour amount to $196,046. Taxes paid to national state and local governments are $44,730 for one hour ($1,073,520 for 24 hours). Cars loaded with revenue freight in one hour number 6,086; total tonnage loaded, 152,572 tons. The passage of an hour notes the boarding of cars by 98,213 passengers. One hour's freight service equals hauling 50,689,328 tons of freight one mile, while the passenger service in an hour is equal to carrying 4,051,019 passengers one mile.

New York Conference on Grade Crossings

Governor Alfred E. Smith, of New York, has written to the presidents of the 43 railroads operating in that state, inviting them to a conference with him at Albany, on Monday, October 10, to consider questions connected with the elimination of highway grade crossings. The law which was adopted by the state of New York, under the last constitutional amendment, authorizes the expenditure of $300,000,000 of state money for this purpose, the state to use a portion of the money to make loans to railroads or small towns whenever the financial burden at a given crossing shall be found too heavy; but many towns are unwilling to accept these loans, or to burden themselves in any way, and the governor asks the co-operation of the railroads in overcoming various difficulties. The governor will be attended by the attorney general, the Public Service Commission and other state officers, and he asks the presidents to bring with them their subordinates, if they desire.

Port Authorities to Meet in St. Louis

The American Association of Port Authorities will hold its sixteenth annual convention at the Hotel Statler, St. Louis, Mo., on October 4-7.

On the first day reports will be presented by various committees, including those on port research, standardization of statistics, co-ordination of transport, legislation, glossary, port finance, fire prevention, zinc coating of iron and steel, reinforced concrete royalties and international navigation congress. In addition there will be several addresses and a presentation of papers on the importance of the trade of the middle west, the Mississippi flood of 1927, the relationship between inland ports and water craft, European inland waterways, the effect in the south of the Panama Canal, and river ports and inland navigation in North America.

Other papers on following days include: Types of agreement between port authorities and steamship operators in leasing waterfront properties, belt line operation, admiralty jurisdiction on wharves, private ownership of a wharf system, Milwaukee's port on the Great Lakes, historic development of the port of Montreal, accomplishments and plans of the Port of New York Authority, dredging and dredge design, and standardization of port statistics.

There will also be an inspection of railroad terminals in St. Louis territory and a discussion on railroad absorption of port charges.

Revenues and Expenses for July

The net railway operating income of the 183 Class I railroads in July amounted to $84,383,388, which for that month was at the annual rate of return of 3.95 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In July, 1926, the net railway operating income was $116,974,568 or 5.62 per cent. Operating revenues for July

were $509,379,876, compared with $557,895,181 in July, 1926, a decrease of 8.7 per cent. Operating expenses were $383,716,671, a decrease of 3.2 per cent.

Class I railroads in July paid $31,987,241 in taxes. This brought their total tax bill for seven months in 1927 to $217,147,637, a decrease of $1,343,605 or six-tenths of one per cent below that of the corresponding period in 1926.

Thirty-one Class I railroads operated at a loss in July, of which seven were in the Eastern district, four in the Southern and twenty in the Western.

For the seven months the net railway operating income was $556,997,049, at the rate of 4.47 per cent, as compared with $612,574,771, or 5.05 per cent, in the corresponding period of last year.

Operating revenues for the seven months amounted to $3,531,787,807, a decrease of 1.7 per cent. Operating expenses totaled $2,692,629,041, a decrease of three-tenths of one per cent.

The net railway operating income by districts for the first seven months, with the percentage of return based on property investment on an annual basis, was as follows:

		Per cent
New England Region....	$23,196,876	4.91
Great Lakes Region.....	105,399,330	4.92
Central Eastern Region..	131,826,439	5.01
Pocahontas Region	47,326,769	8.38
Total Eastern District..	307,749,414	5.30
Total Southern District.	78,171,214	4.60
Northwestern Region.....	42,290,944	2.69
Centralwestern Region....	86,637,795	3.76
Southwestern Region.....	42,147,682	3.95
Total Western District..	171,076,421	3.46
United States.....	$556,997,049	4.47

The rate of return on property investment for the five years ending with the month of July, 1927, has averaged 4.55 per cent.

Class I railroads in the Eastern district for the seven months had a net railway operating income of $307,749,414, at the rate of 5.30 per cent, as compared with 5.72 per cent last year. For July they had a net of $45,922,283, compared with $59,076,999 in July, 1926.

Class I railroads in the Southern district for the seven months had a net of $78,171,214, at the rate of 4.60 per cent, as compared with 5.77 per cent last year. For July the net amounted to $9,136,729, as compared with $12,995,228 last July.

Class I railroads in the Western district for the seven months had a net of $171,076,421, at the rate of 3.46 per cent, as compared with $196,427,260 last year. For July their net amounted to $29,324,376, as compared with $44,902,341 in July last year.

Truck Drivers on Strike in New York

From 6,000 to 7,000 truck drivers employed in the transportation of freight to and from railway stations and steamship piers in New York went on strike on September 7 following the refusal of their employers to grant their demands for wage increases. The strike was described as 90 per cent effective by the Merchant Truckmen's Bureau of New York, which is the employers' organization. On the second day of the strike the bureau was making plans to put strike breakers to work under police guard.

According to reports from shipping agencies the movement of freight was only 10 per cent of normal on the first days of the strike. This was due in part to the fact that many employers had no warning of its imminence. This was particularly true of business houses which have no connection with the Truckmen's Bureau and which were ignorant of the fact that the bureau, representing approximately 75 per cent of the trucking equipment of New York, was negotiating with the International Brotherhood of Teamsters and Chauffeurs for a new agreement to replace the one which expired on September 1. The drivers are demanding $45 instead of $40 a week and an 8-hour instead of a 9-hour day. It is estimated that the granting of the demands of the union would involve an increased labor cost in trucking of approximately 30 per cent.

The trucking of freight between their own stations and to those of connecting lines, which is carried on extensively by the railways in New York, was put at a standstill by the strike. According to the secretary of the Truckmen's Bureau, a number of trains and ships were held for freight and some were cancelled as a result of the difficulty in securing receipt of outbound freight. The strike did not affect the express companies nor milk, coal, food and produce movements. The strike was in effect throughout New York and involved part of nearby New Jersey.

Tool Foremen Hold Annual Convention

In spite of an attendance not quite up to the usual standard, the American Railway Tool Foremen's Association held its 15th annual convention at the Hotel Sherman, Chicago, August 31 to September 2, inclusive, and put on a distinctly worthwhile program, details of which were carried out as published on page 354 of the *Railway Age* of August 20. The three outstanding features were addresses by B. N. Lewis, mechanical superintendent of the Minneapolis, St. Paul & Saulte Ste. Marie, and by H. P. Allstrand, assistant superintendent of motive power of the Chicago & North Western, and the continuance of the good work of the association in connection with the standardization of small tools.

Mr. Lewis said that a railroad repair or manufacturing shop is no better than its toolroom and related equipment and that the toolroom of any shop is the best indicator of its efficiency and progressiveness. He emphasized the need of finding the right type of men to supervise tool work and closed with a strong argument for shop facilities in proportion to new locomotives and cars which, if purchased, will have to be maintained. Mr. Allstrand discussed the use of jigs and devices in railroad production work and said that the quality of these labor-saving devices developed at any shop is also indicative of the morale and spirit of the shop organization. Often the most convenient devices are found in the most poorly-equipped shops and are the only means of keeping pace with plants much better equipped. Mr. Allstrand pointed out that the cleverness or ingenuity of an idea does not prove its practicability and a little time spent prowling around the back corners of the average railroad toolroom or shop will produce ample evidence of this fact. He said that the development of jigs and devices is important enough to be handled by the best man obtainable, if possible having a specialist pass on each suggestion, carry it to a conclusion and see that it is put into effect.

At one of its regular sessions, the American Railway Tool Foremen's Association elected the following officers for 1927-28: President E. A. Greame, Delaware, Lackawanna & Western, Scranton, Pa.; first vice-president, W. R. Millican, Missouri-Kansas-Texas, Parsons, Kans.; second vice-president, H. P. Jones, Oregon Short Line, Pocatello, Idaho; third vice-president, A. A. Ferguson, Missouri Pacific, St. Louis, Mo. G. G. Macina, Chicago, Milwaukee & St. Paul, Chicago, was re-elected secretary-treasurer. The following new members of the executive committee were elected: J. Carroll, Chesapeake & Ohio, Huntington, W. Va.; H. L. Taylor, Baltimore & Ohio, Baltimore, Md., and E. J. McKernan, Atchison, Topeka & Santa Fe, Topeka, Kans.

At its regular annual meeting, the American Railway Tool Foremen's Supply Men's Association elected F. A. Armstrong, Pratt & Whitney Co., Chicago, president, and E. H. Lunde, Federal Machinery Sales Company, Chicago, secretary-treasurer. Fifty-eight companies were represented on the exhibition floor and the list of these companies, together with the products on exhibition and representatives in attendance, is as follows:

Edgar Allen Steel Company, Inc., New York.—Literature.

Armstrong-Blum Manufacturing Company, Chicago.—Metal band saw machine, automatic high speed saw and high-speed-edge hack saw blades. Represented by H. J. Blum, S. A. Woleben and F. J. Blum.

Armstrong Brothers Tool Company, Chicago.—Lathe tool holders, stocks and dies, engineering wrenches, pipe wrenches, chrome vanadium wrenches, C-clamps and ratchet drills. Represented by A. F. Arbogast and George Nufer.

Arrow Tools, Inc., Chicago.—Beading tools, caulking tools, chisels, rivet sets and rivet backing out punches. Represented by N. W. Benedict and H. J. Trueblood.

Ashton Valve Company, Boston, Mass.—Wheel press recording gage attachment, wheel press recording gage, driving wheel recording gage, safety valves, steam and air gages. Represented by Charles Gaston.

Charles H. Besly & Co., Chicago.—Taps and abrasive discs. Represented by R. E. Beimer.

The Borden Company, Warren, Ohio.—Die stocks and pipe cutters. Represented by H. R. Williams and V. M. Gasper.

Brown Instrument Company, Philadelphia, Pa.—Indicating, recording and automatic control pyrometers and accessories. Represented by C. L. Saunders.

Brown & Sharpe Manufacturing Co., Providence, R. I.—Milling cutters and tools. Represented by H. G. Clayton, G. Weitendorf and W. A. Weatherhead.

W. L. Brubaker & Bros. Co., Millersburg, Pa.—Literature, taps, reamers and dies. Represented by W. F. Rose and C. W. Borneman.

Buckeye Portable Tool Company, Dayton, Ohio.—Pneumatic drills, grinders, buffers, screw and lag screw drivers, frame jaw grinders, disc sanders, etc. Represented by W. R. Gummere and H. W. Leighton.

Carborundum Company, The, Niagara Falls, N. Y.—Abrasive products. Represented by F. E. Gridley and J. H. Jackson.

Chicago Pneumatic Tool Company, Chicago.—Air motors, riveting hammers, chipping hammers, air grinders, electric grinders, rivet busters, speed recorder and compressors. Represented by R. C. Bucholz, H. R. Deubel, F. O. Duffy and L. F. Duffy.

Clark Equipment Company, Buchanan, Mich.—High speed drills and reamers. Represented by H. G. Tuttle and C. O. Montague.

Cleveland Pneumatic Tool Company, Cleveland, Ohio.—Pneumatic drills, grinders, riveting and

(*Continued on page* 498)

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1927

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net operating income, 1926.
Akron, Canton & Youngstown	July	171	$250,713	$357	$262,327	$39,577	$30,426	$12,291	$72,380	$13,298	$167,972	64.0	$94,355	$83,212	$55,133	$31,276
	7 mos.	171	1,800,104	2,279	1,876,735	278,349	229,008	79,815	537,828	105,354	1,230,181	65.5	646,554	522,222	301,663	200,397
Atchison, Topeka & Santa Fe	July	9,450	12,380,238	3,612,873	17,211,605	3,437,632	3,328,527	368,058	4,670,284	400,063	12,128,643	70.5	5,082,962	3,643,678	3,576,881	6,771,070
	7 mos.	9,412	81,563,163	23,473,594	114,166,693	20,114,453	22,952,795	2,870,221	34,828,330	2,815,726	83,199,260	72.9	30,967,433	21,722,459	21,650,790	23,637,260
Gulf, Colorado & Santa Fe	July	1,944	2,727,726	242,649	3,086,556	502,497	627,037	52,682	858,486	75,702	2,085,355	67.6	1,001,201	917,490	715,491	1,113,565
	7 mos.	1,944	17,611,401	1,610,924	20,133,556	3,932,371	4,310,298	382,494	6,752,790	496,588	15,817,350	78.6	4,316,206	3,726,675	2,428,544	1,637,036
Panhandle & Santa Fe	July	954	1,119,943	107,397	1,294,362	121,544	264,644	10,492	344,429	26,674	735,275	56.8	559,087	488,246	374,889	562,308
	7 mos.	954	7,572,685	936,444	9,060,683	1,498,831	1,944,147	82,073	3,148,271	191,011	6,695,629	73.9	2,365,054	2,084,291	1,258,718	2,180,723
Atlanta & West Point	July	93	158,285	66,714	255,699	25,022	45,134	12,425	98,630	13,501	199,939	78.2	55,760	42,230	27,948	42,077
	7 mos.	93	1,151,632	427,156	1,794,351	207,624	316,161	82,500	678,477	98,308	1,417,220	79.0	377,131	269,832	169,631	214,999
Western of Alabama	July	133	181,934	61,699	267,033	35,156	50,834	12,417	85,796	12,612	201,522	75.5	65,511	54,785	58,620	51,684
	7 mos.	133	1,221,872	397,660	1,792,551	262,235	373,156	86,198	576,279	92,825	1,420,797	79.3	371,754	275,185	286,668	400,638
Atlanta, Birmingham & Coast	July	639	374,232	43,411	459,466	104,277	86,633	27,419	173,378	18,484	421,986	91.8	37,480	23,021	—12	16,476
	7 mos.	639	2,566,101	238,028	3,086,446	751,158	597,134	197,976	1,207,402	129,013	2,962,423	96.0	124,023	23,614	—86,315	89,479
Atlantic Coast Line	July	5,090	3,842,636	976,595	5,322,815	1,054,911	1,350,289	157,026	2,293,681	175,616	5,073,213	95.3	249,602	—104,633	31,340	712,816
	7 mos.	5,063	36,690,553	10,078,082	50,730,291	7,572,957	9,938,895	1,127,540	18,153,267	1,257,983	38,443,409	75.8	12,286,882	8,754,177	8,472,804	12,687,520
Charleston & Western Carolina	July	342	222,776	16,608	249,974	44,750	46,686	8,327	117,815	7,954	225,532	90.2	24,442	6,916	5,974	41,367
	7 mos.	342	1,944,057	114,649	2,140,321	487,943	308,007	51,144	809,915	48,242	1,705,245	79.7	435,076	289,556	253,094	412,598
Baltimore & Ohio	July	5,642	16,709,121	2,403,649	20,321,744	2,500,479	4,454,831	469,790	7,073,707	703,695	15,398,923	75.8	4,922,821	3,889,675	3,687,106	5,608,369
	7 mos.	5,641	117,729,888	14,947,648	141,535,274	16,953,010	30,744,552	3,251,756	50,004,724	4,498,773	106,746,264	75.4	34,789,010	27,718,094	26,337,921	26,472,745
Baltimore & Ohio Chicago Term	July	75	.....	.....	321,130	49,521	35,734	2,348	161,847	15,519	266,155	82.9	54,975	—3,594	102,397	119,433
	7 mos.	75	.....	.....	2,243,256	289,922	280,059	16,125	1,152,194	112,533	1,882,494	83.9	360,762	—10,298	631,393	730,926
Staten Island Rapid Transit	July	23	110,504	167,963	333,579	41,992	16,863	2,264	116,198	16,919	194,236	58.2	139,343	121,725	83,529	41,416
	7 mos.	23	749,242	885,361	1,871,566	286,740	145,084	14,415	773,097	108,767	1,328,103	71.0	543,463	404,694	138,785	1,633
Bangor & Aroostook	July	613	253,614	37,685	318,261	108,166	104,093	5,983	117,289	24,664	363,485	114.2	—45,224	—63,782	—24,690	11,209
	7 mos.	613	3,946,811	440,115	4,571,384	755,195	830,803	40,826	1,155,853	168,703	2,973,928	65.1	1,597,456	1,230,631	1,348,287	1,080,997
Belt Ry. Co. of Chicago	July	32	.....	.....	625,937	73,291	64,925	3,001	284,120	10,170	435,507	69.6	190,430	142,762	150,165	169,300
	7 mos.	32	.....	.....	4,240,295	373,051	437,013	24,717	1,911,048	69,231	2,815,080	66.4	1,425,215	1,091,081	993,349	1,168,577
Bessemer & Lake Erie	July	227	1,377,641	14,159	1,414,462	215,967	323,694	13,386	353,493	32,939	940,171	66.5	474,291	440,671	468,579	1,010,689
	7 mos.	227	7,488,262	86,059	7,723,803	875,603	2,241,836	102,787	2,253,355	247,316	5,614,826	72.7	2,108,977	1,737,551	1,990,251	2,872,656
Bingham & Garfield	July	33	35,911	.....	36,731	9,124	14,664	1,458	9,341	4,748	39,441	107.4	—2,710	—7,623	8,146	15,944
	7 mos.	33	286,642	.....	294,819	55,133	67,827	10,116	70,795	35,081	239,758	81.3	55,061	3,831	119,450	128,427
Boston & Maine	July	2,113	4,056,690	1,796,410	6,609,572	1,040,510	1,002,855	79,430	2,394,619	220,781	4,756,705	72.0	1,852,867	1,556,668	1,317,140	1,313,5[illegible]
	7 mos.	2,111	28,746,755	10,649,578	44,576,450	5,745,931	8,627,828	553,963	17,432,336	1,541,984	34,006,597	76.3	10,569,853	8,489,072	6,838,672	7,529,051
Brooklyn Eastern Dist. Terminal	July	9	100,891	.....	106,952	9,044	18,328	170	43,644	6,206	77,392	72.4	29,560	23,232	23,232	43,742
	7 mos.	9	804,617	.....	848,313	68,212	97,600	4,660	321,588	43,953	536,013	63.2	312,300	262,949	262,949	302,491
Buffalo & Susquehanna	July	253	106,898	1,313	113,427	28,442	47,848	1,773	38,087	7,372	123,522	108.9	—10,085	—12,195	3,029	5,691
	7 mos.	253	859,802	13,355	910,162	197,752	356,415	12,027	304,069	56,085	926,348	101.8	—16,186	—30,886	91,285	—13,974
Buffalo, Rochester & Pittsburgh	July	601	1,267,507	103,166	1,425,158	242,672	443,271	27,936	535,798	47,079	1,299,282	91.2	125,876	75,849	71,727	287,328
	7 mos.	601	9,239,120	643,456	10,238,862	1,150,011	3,351,759	206,616	3,937,980	320,826	8,984,150	87.7	1,254,712	904,292	1,019,670	1,806,783
Canadian Pacific Lines in Maine	July	233	80,777	29,047	123,914	38,829	30,213	6,007	60,601	3,842	139,492	112.6	—15,578	—28,878	—36,123	—43,482
	7 mos.	233	1,330,317	225,835	1,647,019	384,450	336,781	39,698	727,378	26,572	1,514,879	92.0	132,140	39,040	—92,058	—52,217
Canadian Pacific Lines in Vermont	July	85	112,400	54,012	191,639	15,214	29,908	2,379	99,967	3,050	150,518	78.5	41,121	36,371	35,922	1,831
	7 mos.	85	790,253	242,390	1,191,109	190,465	222,097	15,667	714,999	19,246	1,162,474	97.6	28,635	—4,615	—7,758	—5,301
Central of Georgia	July	1,911	1,706,810	401,601	2,314,837	292,294	418,650	73,211	885,499	98,669	1,779,359	76.9	535,478	409,840	386,060	641,514
	7 mos.	1,911	12,075,395	2,718,144	16,255,387	2,040,266	2,956,787	539,090	6,183,186	725,076	12,520,616	77.0	3,734,771	2,880,412	2,734,859	3,132,878
Central New Jersey	July	690	3,528,314	1,035,394	4,867,047	409,678	1,060,166	61,823	1,823,105	108,974	3,490,004	71.7	1,377,043	1,238,343	1,198,044	1,333,905
	7 mos.	690	26,392,853	5,175,851	33,704,555	3,325,547	7,403,136	332,650	13,539,490	832,937	25,607,088	76.0	8,097,467	6,249,258	5,468,643	5,314,957
Central Vermont	July	433	607,840	140,480	829,394	150,792	102,217	20,445	311,751	25,652	612,423	73.8	216,971	197,409	168,703	32,976
	7 mos.	433	3,913,735	747,678	5,157,764	1,022,346	777,722	137,144	2,223,309	170,100	4,336,795	84.1	820,969	685,119	545,453	452,409
Chesapeake & Ohio	July	2,702	9,789,333	778,202	10,996,032	1,622,819	2,441,385	130,866	2,871,492	269,062	7,362,335	67.0	3,633,697	2,917,020	3,095,914	3,598,372
	7 mos.	2,657	69,803,591	5,080,547	77,975,329	11,557,171	17,918,311	898,208	20,624,404	1,949,809	53,163,205	68.2	24,812,124	19,828,719	20,964,166	19,346,674
Chicago & Alton	July	1,029	1,545,560	542,888	2,289,522	376,229	508,733	75,461	877,474	54,583	1,886,949	82.4	402,573	296,786	96,720	259,827
	7 mos.	1,043	11,029,908	3,659,783	16,177,373	2,031,648	3,423,366	543,204	6,228,033	447,346	12,748,730	78.8	3,428,643	2,686,902	1,420,068	1,620,797
Chicago & Eastern Illinois	July	945	1,585,422	440,551	2,203,880	299,509	475,314	83,087	839,389	71,814	1,774,642	80.5	429,238	313,503	151,674	241,680
	7 mos.	945	11,934,184	2,452,155	15,564,427	1,854,713	3,533,913	580,859	6,144,584	492,321	12,667,654	81.4	2,896,773	2,087,769	1,120,968	531,114
Chicago & Illinois Midland	July	133	60,775	5,821	70,732	30,005	66,280	10,387	42,860	12,587	162,119	229.2	—91,387	—98,272	—107,462	13,473
	7 mos.	133	866,738	65,366	963,863	263,797	378,490	58,506	373,541	90,465	1,164,799	120.8	—200,936	—250,560	—306,968	250,213
Chicago & North Western	July	8,463	9,187,957	2,438,521	13,030,023	2,016,637	2,411,671	250,011	4,838,272	345,886	9,922,115	76.1	3,107,908	2,305,414	1,981,003	2,448,707
	7 mos.	8,463	59,659,766	14,837,659	83,557,744	11,916,815	17,024,944	1,490,514	32,675,174	2,454,004	65,938,407	78.9	17,619,337	12,001,248	10,413,846	12,250,068

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net operating income, 1926.
			Freight.	Passenger.	Total (inc. misc.)	Maintenance of—Way and structures.	Maintenance of—Equipment.	Traffic.	Transportation.	General.	Total.					
Chicago, Burlington & Quincy	July	9,391	$8,629,466	$2,292,554	$12,196,479	$2,482,280	$2,237,667	$301,615	$4,175,134	$386,791	$9,661,852	79.2	$2,534,627	$1,741,972	$1,409,836	$2,305,338
	7 mos.	9,391	62,253,934	12,644,850	83,800,390	12,300,038	14,546,472	1,925,490	30,075,850	2,567,965	61,865,903	73.8	21,934,487	15,405,480	13,182,517	14,285,244
Chicago Great Western	July	1,496	1,533,718	297,519	1,989,558	356,697	389,594	83,910	782,337	56,700	1,680,195	84.5	309,363	224,788	83,549	301,880
	7 mos.	1,496	10,580,327	1,878,447	13,560,774	1,916,485	2,718,053	550,909	5,632,920	398,829	11,295,157	83.3	2,265,617	1,684,114	706,673	1,116,457
Chicago, Indianapolis & Louisville	July	650	1,129,545	214,569	1,493,534	158,231	290,035	40,609	535,037	34,088	1,072,588	71.8	420,946	338,857	241,710	251,788
	7 mos.	650	8,056,358	1,493,780	10,600,135	1,020,837	2,247,308	274,261	3,925,432	255,394	7,820,337	73.8	2,779,798	2,258,028	1,553,793	1,502,803
Chicago, Milwaukee & St. Paul	July	11,205	9,875,764	1,843,875	13,041,622	3,143,905	2,933,177	361,560	4,869,015	398,029	11,789,592	90.4	1,252,030	500,096	—82,115	1,408,800
	7 mos.	11,203	68,119,222	10,763,065	87,678,071	15,428,419	20,771,055	2,203,633	34,019,920	2,682,586	75,573,362	86.2	12,104,709	6,834,515	3,725,988	7,580,267
Chicago River & Indiana	July	19	.....	.....	546,018	59,449	74,366	766	199,183	13,215	346,979	63.5	199,039	158,076	263,421	261,070
	7 mos.	19	.....	.....	3,907,004	403,022	547,748	5,903	1,520,705	112,736	2,590,114	66.3	1,316,890	1,033,420	1,824,094	1,785,181
Chicago, Rock Island & Pacific	July	7,575	8,417,337	1,847,938	11,236,458	1,685,330	2,356,752	236,198	3,847,409	305,572	8,362,428	74.4	2,874,030	2,241,551	1,743,229	2,690,629
	7 mos.	7,575	56,575,888	12,778,786	75,832,502	10,364,157	16,125,807	1,597,493	28,371,119	2,216,663	58,662,755	77.4	17,169,747	12,713,416	9,578,520	8,218,038
Chicago, Rock Island & Gulf	July	495	488,375	81,745	626,549	138,635	77,473	21,506	219,222	17,314	469,941	75.	156,608	130,198	94,782	406,990
	7 mos.	463	3,419,867	576,953	4,321,278	682,862	567,162	143,717	1,570,653	121,759	3,029,251	70.1	1,292,027	1,106,708	880,389	837,616
Chic., St. Paul, Minn. & Omaha	July	1,746	1,513,806	423,968	2,116,413	612,918	347,010	34,116	871,803	73,251	1,943,359	91.8	173,054	69,121	—10,337	168,096
	7 mos.	1,746	10,600,933	2,744,304	14,510,478	2,186,271	2,765,129	242,434	6,284,110	532,369	12,069,007	83.2	2,441,471	1,706,053	1,176,124	1,256,418
Clinchfield Railroad	July	309	582,955	26,254	621,318	88,910	165,648	23,209	125,835	21,469	424,793	68.4	196,525	121,508	231,176	301,633
	7 mos.	309	4,434,963	173,338	4,697,222	533,236	1,214,129	162,203	978,447	137,010	3,022,835	64.4	1,674,387	1,149,343	1,962,518	1,936,903
Colorado & Southern	July	1,054	728,437	155,793	972,140	270,446	231,492	14,153	367,604	44,096	937,102	96.4	35,038	—35,611	—65,752	12,378
	7 mos.	1,054	5,601,506	783,914	7,005,107	1,554,297	1,712,860	109,116	2,533,838	308,498	6,271,085	89.5	734,022	281,627	230,359	650,894
Ft. Worth & Denver City	July	491	683,557	220,204	975,213	263,280	163,568	24,108	270,494	38,015	745,784	76.5	229,429	203,917	187,212	497,585
	7 mos.	491	5,168,130	1,474,356	7,174,460	1,517,411	1,240,044	137,278	2,166,458	278,315	5,320,732	74.2	1,853,728	1,432,642	1,350,772	1,937,350
Wichita Valley	July	271	77,060	14,166	98,877	44,883	7,542	1	37,474	2,006	91,708	92.7	7,169	381	—18,855	33,333
	7 mos.	271	831,653	113,862	998,896	199,805	68,234	121	308,411	14,305	589,713	59.0	409,183	346,451	204,383	157,928
Columbus & Greenville	July	167	105,451	15,550	127,894	71,444	14,885	3,892	49,489	10,499	150,209	117.4	—22,315	—23,515	—42,598	11,714
	7 mos.	167	792,871	143,026	976,886	316,570	130,303	24,918	357,283	84,821	913,895	93.6	62,991	55,055	—61,431	49,875
Conemaugh & Black Lick	July	23	104,546	.....	159,330	21,549	29,897	1,182	76,997	2,847	132,472	83.1	26,858	25,658	26,136	22,818
	7 mos.	23	553,089	.....	990,636	136,418	228,077	7,506	615,692	21,381	1,009,074	101.9	—18,438	—26,838	—24,228	1,443
Delaware & Hudson	July	881	2,830,754	406,368	3,514,296	475,391	875,807	56,725	1,229,270	134,975	2,789,969	79.4	724,327	607,327	621,257	1,391,550
	7 mos.	881	20,825,075	1,922,507	24,399,691	3,166,903	6,754,914	366,434	8,945,640	986,867	20,349,633	83.4	4,050,058	3,230,581	3,050,281	5,166,618
Delaware, Lackawanna & Western	July	999	4,677,542	1,271,414	6,789,109	711,027	999,355	142,030	2,562,633	170,752	4,636,113	68.3	2,152,996	1,502,245	1,523,004	1,907,306
	7 mos.	999	35,408,613	7,407,727	48,527,516	4,845,400	8,638,617	953,010	19,307,689	1,255,028	35,352,343	72.9	13,175,173	8,959,831	9,068,005	9,905,875
Denver & Rio Grande Western	July	2,571	1,869,968	536,435	2,670,025	627,029	499,826	59,515	797,027	91,203	2,136,086	80.0	533,939	343,810	435,775	719,421
	7 mos.	2,547	13,622,722	2,353,182	17,329,296	3,787,345	3,521,101	405,561	5,279,305	616,347	13,029,944	79.8	3,499,352	2,197,386	2,705,061	3,691,764
Denver & Salt Lake	July	255	219,431	25,437	267,714	140,436	85,241	2,385	58,871	8,407	293,868	109.8	—26,154	—34,970	—26,662	—23,740
	7 mos.	255	1,706,651	187,243	2,026,672	684,751	755,547	12,128	474,058	60,604	1,981,924	97.8	44,748	—5,642	36,463	11,854
Detroit & Mackinac	July	375	117,429	17,437	148,919	38,698	23,906	2,715	47,473	5,077	108,008	72.5	40,911	30,796	33,183	17,055
	7 mos.	375	742,807	103,127	925,380	168,071	189,452	13,568	334,030	38,165	729,807	78.9	195,573	123,512	145,950	51,976
Detroit & Toledo Shore Line	July	50	308,997	.....	313,465	59,948	25,265	3,358	80,964	6,579	176,114	56.1	137,351	107,780	51,704	26,223
	7 mos.	50	2,895,439	.....	2,930,475	380,638	229,267	24,380	707,824	47,890	1,389,999	47.4	1,540,476	1,336,960	716,916	576,808
Detroit Terminal	July	19	.....	.....	177,444	22,556	13,810	.....	78,775	3,949	119,090	67.1	58,354	44,474	40,257	54,716
	7 mos.	19	.....	.....	1,241,608	127,337	106,713	49	578,933	28,198	841,230	67.7	400,378	286,564	329,749	244,801
Detroit, Toledo & Ironton	July	495	573,071	5,336	594,344	137,760	140,911	13,023	233,250	35,989	551,198	92.7	43,146	22,250	—44,044	140,548
	7 mos.	495	5,226,700	38,708	5,363,361	859,726	1,083,445	96,407	1,819,671	301,837	4,151,068	77.4	1,212,293	954,380	519,689	1,434,226
Duluth & Iron Range	July	274	896,977	5,463	1,029,331	148,552	107,943	1,931	204,977	16,984	480,950	46.7	548,381	470,241	472,929	616,345
	7 mos.	274	3,226,613	43,407	3,717,798	719,225	778,156	14,356	1,061,383	153,377	2,726,719	73.3	991,079	638,038	649,496	678,932
Duluth, Missabe & Northern	July	306	2,308,807	4,601	2,620,734	200,699	196,218	3,196	362,337	22,697	785,080	30.0	1,835,654	1,591,675	1,587,614	2,157,931
	7 mos.	305	8,030,773	42,076	9,155,753	1,333,988	1,473,617	22,840	1,781,676	168,738	4,780,493	52.2	4,375,260	3,167,653	3,130,866	2,990,390
Duluth, Winnipeg & Pacific	July	178	187,808	21,915	221,214	47,149	43,743	5,147	71,046	7,329	177,580	80.3	43,634	32,542	36,282	7,593
	7 mos.	178	1,301,382	119,642	1,473,918	291,014	334,532	32,618	496,918	56,794	1,222,581	83.0	251,337	178,050	197,738	153,947
Elgin, Joliet & Eastern	July	461	1,760,389	15	1,918,455	215,206	396,787	14,443	669,646	48,422	1,341,427	69.9	577,028	460,920	331,803	529,295
	7 mos.	460	13,608,610	56	14,856,818	1,459,149	2,885,392	99,190	5,078,392	342,216	9,846,780	66.3	5,010,038	4,310,892	3,271,287	3,510,124
Erie Railroad	July	2,047	7,078,277	1,229,466	9,081,936	1,176,567	2,167,800	151,360	3,588,010	304,662	7,416,062	81.7	1,665,874	1,307,363	1,354,474	1,283,164
	7 mos.	2,047	50,243,159	6,779,338	62,152,387	7,379,457	16,277,126	1,040,789	25,116,109	2,069,221	52,171,747	83.9	9,980,640	7,377,836	7,386,106	7,033,808
Chicago & Erie	July	269	940,037	61,456	1,100,918	153,505	115,372	25,508	341,500	40,611	675,588	61.4	425,330	370,400	46,642	107,639
	7 mos.	269	6,891,072	360,419	7,915,769	962,060	980,618	168,125	2,589,060	292,490	4,990,809	63.0	2,924,960	2,541,210	195,615	541,199
New Jersey & New York	July	45	36,493	110,896	142,250	22,265	23,025	1,546	67,813	4,139	118,776	83.5	23,474	19,897	—16,443	—3,332
	7 mos.	45	203,535	676,964	916,929	124,060	149,581	11,386	524,613	29,527	839,072	91.5	77,857	52,645	—176,383	—119,766
N. Y., Susquehanna & Western	July	134	300,305	57,764	396,451	46,372	57,694	4,655	192,544	11,775	312,992	78.9	83,459	54,976	26,368	32,767
	7 mos.	134	2,198,056	348,326	2,838,225	331,963	452,381	35,036	1,463,164	85,739	2,368,140	83.4	470,085	270,330	85,8[illegible]	286,226

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net operating income, 1926.
Evansville, Indianap's & Terre Haute	July	146	$226,116	$4,418	$236,422	$29,344	$24,083	$2,085	$71,523	$5,885	$132,879	56.2	$103,543	$94,732	$37,378	$11,508
	7 mos.	146	1,326,095	37,523	1,410,397	190,765	178,924	15,648	489,147	52,377	942,296	66.8	468,101	420,702	139,642	182,588
Florida East Coast	July	846	570,846	284,721	981,655	284,565	212,471	28,253	464,797	50,195	1,044,668	106.4	—63,013	—188,619	—242,153	246,174
	7 mos.	846	7,582,855	3,683,684	12,593,277	2,437,871	1,898,138	232,872	4,341,197	382,792	9,413,109	74.7	3,180,168	2,292,539	1,264,338	3,598,270
Fort Smith & Western	July	249	105,565	11,542	124,054	24,594	27,173	5,361	44,139	7,269	107,441	86.6	16,613	11,113	—1,138	—4,583
	7 mos.	249	805,808	84,904	940,753	197,315	202,666	38,867	342,533	54,046	830,372	88.3	110,381	74,306	—9,683	—14,684
Galveston Wharf	July	13	.....	.....	174,570	56,368	4,282	1,853	32,644	2,741	118,329	67.8	56,241	29,741	29,905	88,247
	7 mos.	13	.....	.....	1,156,850	333,053	33,847	11,881	236,045	25,832	744,787	64.4	412,063	283,563	283,182	96,208
Georgia Railroad	July	328	353,497	81,981	463,256	46,237	87,697	23,183	193,883	22,784	373,982	80.7	89,274	81,171	97,384	90,421
	7 mos.	328	2,572,439	494,113	3,284,285	370,049	618,542	167,131	1,420,975	163,347	2,738,182	83.4	546,103	471,754	553,444	594,719
Georgia & Florida	July	445	122,556	18,403	148,868	25,789	23,791	10,135	59,340	8,648	127,924	85.9	20,944	13,244	12,502	21,249
	7 mos.	445	915,193	111,061	1,080,467	191,075	152,562	69,745	407,222	57,519	879,683	81.4	200,784	146,190	123,925	118,884
Grand Trunk Western	July	347	1,389,626	255,475	1,732,125	214,034	364,278	46,469	561,125	63,912	1,245,175	71.9	486,950	400,621	238,689	153,516
	7 mos.	347	10,245,837	1,275,554	12,109,877	1,320,298	2,603,298	292,528	4,158,981	442,854	8,831,959	72.9	3,277,918	2,686,263	1,811,604	1,785,836
Atlantic & St. Lawrence	July	166	137,411	39,892	203,652	47,646	31,702	7,023	90,004	9,037	186,563	91.6	17,089	4,579	—53,264	—20,950
	7 mos.	166	1,225,874	216,398	1,586,994	283,584	266,291	43,779	757,236	59,750	1,420,250	89.5	166,744	76,534	—379,669	—317,843
Chic., Det. & Canada Gr. Tr. Jct.	July	59	273,011	1,116	310,900	30,282	15,840	4,899	95,822	3,787	150,512	48.4	160,388	149,983	120,483	100,099
	7 mos.	59	2,024,535	7,741	2,315,455	285,518	123,010	31,812	715,035	31,517	1,186,284	51.2	1,129,171	1,056,526	825,101	755,717
Detroit, Grand Haven & Mil	July	189	706,516	32,682	789,943	143,019	60,454	14,204	254,262	18,493	490,093	62.0	299,850	285,740	188,566	181,183
	7 mos.	189	4,321,071	203,902	4,863,113	538,757	421,585	90,860	1,819,059	129,109	2,994,419	61.6	1,868,694	1,776,079	1,059,416	903,524
Great Northern	July	8,164	7,523,246	1,204,436	9,789,740	1,426,805	1,481,379	232,788	2,944,981	210,025	6,380,971	65.2	3,408,769	2,463,973	2,400,388	3,002,761
	7 mos.	8,164	44,579,000	7,131,009	57,573,969	8,945,627	10,211,866	1,552,668	20,088,224	1,551,945	42,794,176	74.3	14,779,793	9,246,102	9,433,223	10,025,703
Green Bay & Western	July	234	105,842	4,998	117,543	31,371	22,951	4,482	47,579	3,483	109,633	93.3	7,910	—90	—3,039	14,200
	7 mos.	234	815,198	46,189	904,772	174,078	144,825	30,764	350,863	19,919	720,165	79.6	184,607	128,606	109,747	159,040
Gulf & Ship Island	July	307	241,543	41,336	302,892	107,482	65,503	5,629	108,163	7,780	298,118	98.4	4,774	—19,084	—34,485	—117,777
	7 mos.	307	1,730,989	288,907	2,183,129	846,251	396,348	40,062	868,186	58,858	2,235,062	102.4	—51,933	—219,035	—306,206	—700,846
Gulf, Mobile & Northern	July	695	509,279	32,140	563,038	108,063	89,718	31,243	175,890	29,535	434,700	77.21	128,338	96,618	77,544	109,517
	7 mos.	637	3,560,208	210,354	3,924,460	686,978	608,889	207,245	1,147,332	186,007	2,838,104	72.32	1,086,356	830,154	693,877	758,710
Hocking Valley	July	348	1,673,500	67,857	1,958,919	229,798	358,165	18,460	520,821	46,707	1,173,942	59.9	784,977	667,551	572,571	421,387
	7 mos.	348	10,714,505	461,763	12,301,619	1,323,109	2,612,803	116,149	3,452,482	309,156	7,813,454	63.5	4,488,165	3,686,961	3,130,412	2,468,024
Illinois Central	July	4,874	10,044,420	1,850,389	12,731,659	1,662,260	3,216,940	252,917	4,240,486	342,075	9,786,906	76.9	2,944,753	2,204,940	2,092,056	2,151,294
	7 mos.	4,874	69,774,642	13,619,851	89,947,429	10,340,942	20,860,146	1,839,844	32,225,448	2,433,739	68,209,672	75.8	21,737,757	15,852,504	15,083,234	14,505,757
Yazoo & Mississippi Valley	July	1,710	1,515,508	334,428	1,978,431	540,761	397,806	48,273	705,336	70,013	1,768,391	89.4	210,040	31,485	—22,480	139,208
	7 mos.	1,710	11,569,000	2,123,987	14,624,062	3,373,193	2,794,710	340,852	5,551,164	511,441	12,603,292	86.2	2,020,770	766,278	383,055	1,320,777
Illinois Central System	July	6,584	11,570,931	2,191,594	14,727,982	2,203,021	3,618,786	301,190	4,960,348	412,125	11,573,900	78.6	3,154,082	2,230,874	2,076,472	2,298,221
	7 mos.	6,584	81,404,397	15,770,255	104,658,777	13,714,135	23,692,558	2,180,696	37,842,669	2,945,637	80,917,180	77.3	23,741,597	16,568,058	15,502,068	15,876,909
Kansas City, Mexico & Orient	July	272	227,140	9,617	245,277	59,527	44,761	8,521	99,706	8,248	220,763	90.0	24,514	20,403	22,946	5,945
	7 mos.	272	1,614,285	47,435	1,720,582	450,580	353,757	59,371	731,114	77,913	1,672,512	97.2	48,070	18,469	73,870	25,442
Kansas City, Mex. & Orient of Tex.	July	465	579,700	17,194	614,086	167,115	68,728	9,679	185,870	9,946	441,170	71.8	172,916	165,819	55,942	9,377
	7 mos.	465	3,613,654	129,070	3,850,852	963,775	544,775	67,652	1,324,388	89,243	2,988,077	77.6	862,775	812,717	198,639	46,157
Kansas City Southern	July	784	1,392,965	124,212	1,684,954	179,612	275,670	54,460	494,831	88,313	1,092,634	64.8	592,320	481,690	403,423	388,780
	7 mos.	784	9,008,242	766,568	10,884,050	1,199,805	1,832,830	361,489	3,441,445	579,371	7,404,473	68.0	3,479,577	2,705,152	2,344,676	2,470,658
Texarkana & Ft. Smith	July	81	219,823	10,799	245,406	39,617	35,831	6,514	72,515	11,193	166,727	67.9	78,679	63,737	28,129	63,087
	7 mos.	81	1,522,499	68,018	1,709,010	262,160	174,197	44,842	504,315	73,334	1,066,183	62.4	642,827	537,869	312,731	485,150
Kansas, Oklahoma & Gulf	July	326	211,888	4,424	221,078	65,141	15,649	9,526	64,484	8,060	159,056	71.9	62,022	51,975	39,363	33,762
	7 mos.	326	1,519,776	33,258	1,589,921	642,252	148,849	65,555	478,737	51,261	1,362,934	85.7	226,987	159,283	44,393	—455,368
Lake Superior & Ishpeming	July	160	249,668	1,364	290,686	45,173	23,718	646	58,056	5,992	133,562	45.9	157,124	126,140	124,603	217,676
	7 mos.	160	984,127	19,741	1,137,438	235,723	185,040	4,085	306,757	35,455	767,037	67.4	370,401	235,820	216,299	303,415
Lake Terminal	July	13	.....	.....	85,915	15,987	18,505	.....	53,215	2,122	89,829	104.6	—3,914	—7,863	—7,167	12,709
	7 mos.	13	.....	.....	626,387	105,325	146,372	.....	387,873	13,074	652,644	104.2	—26,257	—55,490	—61,409	19,578
Lehigh & Hudson River	July	96	257,636	2,317	270,350	38,277	43,015	2,407	91,153	10,176	185,028	68.4	85,322	68,631	47,423	61,719
	7 mos.	96	1,835,479	13,726	1,941,637	225,204	306,810	14,641	691,367	68,442	1,306,408	67.3	635,229	518,648	354,979	378,430
Lehigh & New England	July	216	467,888	1,074	476,070	62,113	138,338	6,200	159,005	16,669	382,325	80.3	93,745	80,966	64,856	195,470
	7 mos.	216	3,255,555	8,400	3,322,590	331,431	729,547	39,925	1,096,158	117,645	2,309,089	69.5	1,013,501	866,089	821,067	822,942
Lehigh Valley	July	1,363	4,122,196	790,082	5,364,535	877,878	1,302,836	136,294	2,324,599	146,029	4,830,337	90.0	534,198	565,146	472,525	1,644,203
	7 mos.	1,363	34,816,456	4,396,211	42,595,809	4,785,888	9,736,671	947,763	17,798,869	1,044,806	34,550,105	81.1	8,045,704	6,291,441	5,059,713	7,289,293
Louisiana & Arkansas	July	302	243,749	17,634	269,026	54,462	57,081	11,139	84,014	11,299	217,724	80.9	51,302	29,164	21,056	53,248
	7 mos.	302	1,855,130	105,513	2,048,067	410,554	436,877	78,237	641,139	81,203	1,646,563	80.4	401,504	226,206	155,221	430,070
Louisiana & Miss. R. R. Transfer Co.	July	...	11,003	6,777	17,892	.....	4,040	.....	14,526	37	18,603	104.0	—711	—1,528	—1,528	—340
	7 mos.	...	60,755	26,417	87,286	.....	37,702	.....	66,057	457	104,216	119.4	—16,930	—22,649	—22,649	—312

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net operating income, 1926.
Louisiana Ry. & Navigation Co.	July	337	$227,777	$18,860	$262,824	$55,353	$27,081	$12,477	$96,824	$9,550	$199,775	76.0	$63,049	$41,054	$12,314	—$4,034
	7 mos.	337	1,577,560	85,822	1,774,488	423,413	250,317	87,689	815,416	69,404	1,634,886	92.1	139,602	—17,848	—219,047	—124,502
Louisiana Ry. & Nav. Co. of Tex.	July	206	68,049	4,825	75,797	18,442	12,357	4,605	35,966	6,536	77,906	100.3	2,109	—6,146	—17,719	15,199
	7 mos.	206	530,528	29,553	585,909	147,393	94,179	22,740	277,223	43,153	584,473	99.8	1,436	—26,651	—121,026	—77,033
Louisville & Nashville	July	5,064	9,454,420	1,834,667	11,949,229	1,827,019	2,674,563	255,682	4,170,871	335,476	9,292,231	77.8	2,656,998	2,025,698	2,030,710	2,689,418
	7 mos.	5,062	67,245,692	11,876,353	83,789,815	13,022,503	19,404,867	1,837,677	29,508,672	2,362,176	66,433,060	79.3	17,356,755	13,318,658	13,018,705	15,610,182
Louisville, Henderson & St. Louis	July	199	233,947	53,470	303,196	60,806	40,843	9,692	106,449	13,987	231,777	76.4	71,419	53,752	46,054	18,315
	7 mos.	199	1,786,753	359,092	2,265,314	416,897	329,862	56,545	746,440	84,141	1,633,885	72.1	631,429	490,339	444,349	300,578
Maine Central	July	1,121	1,066,570	378,448	1,615,241	295,502	290,150	17,461	688,241	56,820	1,354,101	83.8	261,140	146,751	145,701	227,704
	7 mos.	1,121	8,640,080	2,152,870	11,859,168	1,947,974	2,228,910	111,683	4,757,120	399,711	9,452,675	79.7	2,406,493	1,608,463	1,370,845	1,595,513
Midland Valley	July	364	287,951	26,161	325,404	72,402	37,806	7,883	84,227	16,380	217,825	66.9	107,579	88,174	66,355	104,757
	7 mos.	364	1,947,581	201,433	2,231,448	382,782	263,765	51,332	602,156	112,676	1,410,863	63.2	820,585	684,164	552,591	739,427
Minneapolis & St. Louis	July	1,627	947,715	80,758	1,089,943	184,289	245,909	36,686	500,513	48,732	1,015,005	93.1	74,938	11,581	—35,195	—50,845
	7 mos.	1,627	6,633,654	630,33 3	7,693,572	1,446,024	1,879,447	248,572	3,684,249	324,081	7,574,110	98,4	119,462	—269,048	—609,080	—451,684
Minneapolis, St. Paul & S.S. Marie	July	4,396	3,142,161	625,965	4,133,892	628,310	698,575	73,403	1,428,358	111,200	2,975,449	72.0	1,158,443	912,288	792,863	749,582
	7 mos.	4,396	19,786,319	3,259,605	25,076,475	3,814,615	5,062,544	515,800	9,820,523	792,837	20,145,496	80.3	4,930,979	3,324,390	2,588,540	2,754,143
Duluth, South Shore & Atlantic	July	589	339,768	67,059	45,790	110,147	67,080	7,883	171,412	10,219	371,738	81.2	86,052	54,052	36,872	12,387
	7 mos.	589	2,357,893	456,164	3,090,760	537,735	484,250	54,338	1,282,184	81,508	2,471,166	80.0	619,594	407,579	298,039	148,736
Spokane International	July	165	88,653	11,805	107,649	19,418	7,499	3,698	29,643	6,142	67,541	62.7	40,108	34,741	26,253	23,289
	7 mos.	165	580,128	71,666	695,813	117,177	56,802	25,317	224,898	45,433	477,021	68.6	218,792	181,164	127,943	167,298
Mississippi Central	July	161	121,149	10,489	136,150	27,224	25,506	9,070	35,554	8,477	105,831	77.7	30,319	22,385	25,759	29,322
	7 mos.	161	835,804	61,582	930,566	140,529	180,993	58,374	257,086	55,457	692,403	74.4	238,163	180,142	199,782	213,490
Missouri & North Arkansas	July	364	112,791	15,955	136,892	44,586	19,071	11,482	52,876	8,231	136,246	99.5	646	—1,694	—11,420	—8,020
	7 mos.	364	817,610	103,387	985,799	270,376	115,301	68,890	367,907	52,949	875,423	88.8	110,376	93,404	20,421	—135,420
Missouri-Kansas-Texas	July	1,799	2,381,479	333,860	2,891,368	463,779	656,144	64,346	722,289	93,744	2,009,500	69.5	881,868	700,396	689,337	984,210
	7 mos.	1,799	16,232,750	2,411,820	20 051,688	2,669,079	4,533,492	459,651	5,297,043	676,145	13,691,377	68.3	6,360,311	5,032,515	5,081,082	5,378,866
Missouri-Kansas-Texas of Texas	July	1,389	1,155,900	307,568	1,592,336	252,720	239,861	50,191	626,427	64,893	1,248,902	78.4	343,434	290,797	138,650	261,274
	7 mos.	1,389	8,702,556	2,265,086	11,928,637	1,779,874	1,789,486	355,394	4,856,869	462,141	9,342,562	78.3	2,586,075	2,200,999	1,039,284	1,053,371
Missouri Pacific	July	7,358	8,190,981	1,381,412	10,398,040	1,767,223	2,037,256	285,790	3,695,096	345,508	8,084,646	77.8	2,313,394	1,907,038	1,545,835	1,605,840
	7 mos.	7,353	56,197,474	8,557,390	70,541,945	11,864,177	14,154,910	2,030,413	26,833,187	2,486,961	57,571,720	81.6	12,970,225	10,027,844	7,416,842	10,331.6 0
Gulf Coast Lines	July	1,004	896,972	143,429	1,098,543	268,728	223,822	42,436	384,733	57,918	973,619	88.63	124,924	64,698	60,406	196,575
	7 mos.	984	7,591,849	1,131,328	9,283,881	1,766,857	1,606,466	280,547	3,003,536	396,2 6	7,049,895	75.94	2,233,986	1,793,006	1,207,584	2,000,217
International-Great Northern	July	1,159	912,783	200,362	1,214,667	281,013	240,908	46,757	533,218	64,448	1,119,454	92.16	95,213	52,623	37,734	187,528
	7 mos.	1,159	7,833,720	1,396,422	10,189,417	1,837,949	1,801,307	260,565	4,336,802	439,153	8,528,994	83.70	1,660,423	1,363,800	866,609	978 687
San Antonio, Uvalde & Gulf	July	318	106,492	19,530	133,802	31,507	23,636	5,480	57,849	5,904	124,620	93.14	9,182	5,576	—16,967	18,480
	7 mos.	318	941,004	147,248	1,177,314	247,166	155,158	36,325	374,745	44,009	861,609	73.18	315.705	290,177	99,258	189,873
Texas & Pacific	July	1,954	2,235,568	444,889	2,869,533	481,694	544,089	78,689	1,006,625	99,968	2,204,581	76.8	664,952	509,686	330,847	432,872
	7 mos.	1,954	16,724,181	3,180,917	21,284,796	3,727,851	3,974,070	512,140	7,628,158	695,827	16,572,036	77.9	4,712,760	3,617,712	2,562,972	2,471,284
Mobile & Ohio	July	1,161	1,188,773	114,365	1,380,914	211,163	270,935	54,482	527,663	44,344	1,106,779	80.1	274,135	192,322	173,910	275,876
	7 mos.	1,161	9,045,923	739,344	10,366,712	1,557,598	1,913,271	377,240	3,849,200	330,387	8,025.532	77.4	2,341,180	1,750,387	1,478,992	1,950,243
Monongahela	July	169	581,796	22,044	610,129	85,000	75,000	957	143,627	9,732	313,508	51.4	296,621	270,108	171,959	175,789
	7 mos.	169	4,292,920	178,529	4,513,240	545,000	475,000	7,269	1,163,588	70,664	2,256,653	50.0	2,256,587	2,053,378	1,355,658	1,182.203
Monongahela Connecting	July	7	.....	.....	150,388	22,648	28,075	375	67,710	3,751	122,559	81.5	27,829	20,575	19,669	32,677
	7 mos.	7	.....	.....	1.211,767	130,290	228,083	2,643	522,371	23,353	906,740	74.8	305.027	240,314	223,636	254,464
Montour	July	57	106,573	24	107,226	28,101	42,649	1,218	19,320	7,363	98,651	92.0	8,575	2,474	36,621	37,885
	7 mos.	57	746,049	1,906	751,980	171,958	307,481	8,452	166,505	59,449	713,845	94.9	38,135	-6	227,624	122,110
Nashville, Chatt. & St. Louis	July	1,259	1,367,536	346,529	1,899,569	285,122	376,133	83,733	686,127	78,109	1,511,669	79.6	387,900	297,556	308,987	398,666
	7 mos.	1,259	9,891,668	2,304,708	13.399.156	1,856.554	2,709,035	601,621	4,883,799	555,308	10.641,128	79.4	2,758.028	2,234,564	2.316.676	2,114,210
Nevada Northern	July	165	67,063	4,971	79,384	11,844	5,502	985	14,597	4,853	37,941	47.8	41,443	30,780	31,125	33,292
	7 mos.	165	461,147	42,897	555,320	87,531	34,736	6,560	109,208	32,806	272,314	49.0	283,006	224,069	228,637	215,812
Newburgh & South Shore	July	7	.....	.....	157,505	19,898	30,793	.....	59,137	5,139	114,967	73.0	42,538	27,864	27,303	31,550
	7 mos.	7	.....	.....	1.021,200	142.168	258,568	.....	431,993	30,387	863.116	84.5	158,084	72,229	101,493	156.910
New Orleans Great Northern	July	276	232,628	32,032	272,380	51,502	62,087	10,678	78,802	10,536	213,324	78.3	59,056	43,941	27,420	54,775
	7 mos.	274	1,607,305	173,990	1,848,159	308,862	341,270	58,165	518,501	75,054	1,297,209	70.2	550,950	436,516	303,361	341,611
New York Central	July	6,925	18,189,760	9,530,541	31,756,569	4,766,160	6,251,190	455,864	10,554,695	1,094,284	23,597,794	74.3	8,158,775	5,947,434	5,689,513	6,768,699
	7 mos.	6,925	139,078,290	57,037,040	224,189,442	30,523,120	46,273,439	2,910,466	78,723,074	8,270,519	169.813.136	75.7	54.376,306	39,186.881	36,834,122	39,970,491
Cincinnati Northern	July	244	351,924	6,971	368,320	50,226	73,515	5,743	116,940	9,325	255,607	69.4	112,713	86,498	63,530	43,051
	7 mos.	244	2,565,477	40,169	2,662,997	331,410	542,852	44,891	871,227	77,066	1,868,182	70.2	794,815	625,031	440,579	490,210
Cleve., Cinn., Chicago & St. L.	July	2,397	5,416,644	1,436,176	7,443,257	964,788	1,592,468	152,718	2,764,247	270,328	5,820,693	78.2	1,622,564	1,242,487	1,113,254	1,434,369
	7 mos.	2,397	39,422,935	9,089,655	52,862,581	6,189,519	11,440,757	1,021,329	19,840,977	1,906,867	40,924,068	77.4	11,938,513	9,068,219	8,322,025	9,486.900

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net operating income, 1926.
Indiana Harbor Belt	July	117	.....	.....	$896,666	$132,978	$117,313	$4,802	$364,023	$26,516	$645,632	72.1	$250,034	$208,507	$131,071	$253,747
	7 mos.	116	.....	.....	6,553,712	980,106	988,547	34,074	2,754,430	185,973	4,941,342	75.4	1,612,370	1,298,334	1,027,228	1,185,609
Michigan Central	July	1,855	$4,916,389	$1,942,368	7,529,956	1,098,033	1,409,247	134,492	2,396,083	263,258	5,398,636	71.7	2,131,320	1,636,424	1,544,295	1,762,039
	7 mos.	1,855	35,598,570	11,391,687	52,036,422	5,904,770	9,799,266	886,014	17,246,844	1,838,044	36,320,495	69.8	15,715,927	12,222,302	11,972,605	13,393,005
Pittsburgh & Lake Erie	July	231	2,522,504	251,925	2,856,317	408,986	740,825	30,270	895,018	75,924	2,152,064	75.3	704,253	511,053	869,417	761,202
	7 mos.	231	16,918,291	1,626,780	19,155,553	2,642 538	6,088,020	182,452	6,279,996	559,174	15,762,349	82.3	3,393,204	2,217,381	4,760,550	4,897,832
New York, Chicago & St. Louis	July	1,691	4,226,827	214 955	4.586,964	662,058	838,077	123,329	1,491,555	152,064	3,262,503	71.1	1,324,461	1,055,183	778,274	699,935
	7 mos.	1,691	29,204,834	1,052,654	31,241,935	3,789,616	6,130,584	866,025	10,897,197	1,132,694	22,739,387	72.8	8,502,548	6,718,763	5,437,601	5,590,583
N. Y., New Haven & Hartford	July	2,175	6,163,100	4,431,104	11,713,370	1,675,632	2,160,911	104,978	3,820,926	308,535	8,251,072	70.4	3,462,298	2,958,342	2,277,546	2,079,167
	7 mos.	2,175	42,957,929	28,319,492	79,803,179	11,111,172	15,744,359	639,139	27,895,961	2,290,200	58,911,837	73.8	20,891,342	17,220,586	12,490,366	13,510,126
New York Connecting	July	20	202,747	.....	223,597	26,7 0	13,941	.....	46,800	2,424	89,935	40.2	133,662	96,162	82,926	44,600
	7 mos.	20	1,506,989	.....	1,709,851	176,248	96,520	.....	406,471	12,402	691,641	40.5	1,018,210	743,710	632,506	623,117
New York, Ontario & Western	July	569	612,615	722,813	1,552,505	248,587	221,285	19,023	524,430	32,708	1,047,254	67.5	505,251	455,054	391,374	544,181
	7 mos.	569	4,557,922	1,434,687	7,201,981	1,013,383	1,529,661	126,179	3,205,546	245,960	6,148,796	85.4	1,053,185	701,306	347,897	905,695
Norfolk & Western	July	2,241	8,218,248	606,998	9,175,505	1,243,978	1,845,129	127,306	2,387,056	208,170	5,793,833	63.1	3,381,672	2,530,246	2,786,624	4,260,062
	7 mos.	2,241	58,782,273	4,079,243	65,159,355	8,724,331	13,284,740	784,409	17,169,813	1,475,160	41,385.167	63.5	23,774,188	17,815,140	19,468,886	21,899,060
Norfolk Southern	July	931	617,754	73,569	736,001	98,228	127,884	28,746	287,857	28,782	559,405	76.0	176,596	114,977	93,770	134,917
	7 mos.	931	5,056,522	374,280	5,749,710	708,648	888,674	177,770	2,111,664	210,872	4,021,716	69.9	1,727,994	1,361,033	1,101,700	1,081,066
Northern Pacific	July	6,668	5,442,807	1,247,193	7,468,821	1,011,276	1,518,882	197,458	2,531,054	287.253	5,614 772	75.2	1,854,049	1,178,444	1,573,685	1,895,542
	7 mos.	6,671	37,258,121	6,963,746	8,807,688	7,671,116	10,175,227	1,459,097	17,681,783	1,777,248	39,269,392	80.5	9,538,296	4,857,521	7,326,198	9,421,093
Northwestern Pacific	July	477	374,315	243,217	688,572	100,975	82,819	9,878	260,008	21,080	474,758	68.9	213,814	173,075	161,717	355,777
	7 mos.	477	2,012,859	1,131,894	3,494,763	690,749	562,529	47,058	1,508,388	144,445	2,951,753	84.5	543,010	257,997	189,891	667,834
Pennsylvania R. R	July	10,502	38,023,635	12,199,349	55,200,623	7,781,798	11,294,075	819,433	19,988,810	1,591,599	42,160,629	76.4	13,039,994	9,169,932	7,907,439	9,653,086
	7 mos.	10,502	271,936,325	81,866,707	388,872,661	50,087,388	83,952,300	5,494,323	145,338,469	11,115,295	301,000,792	77.4	87,871,869	67,721,592	59,072,504	53,354,096
Baltimore, Chesapeake & Atlantic	July	130	121,832	55,553	185,957	14,944	29,327	2,525	98,414	2,854	148,064	79.6	37,893	24,929	24,645	15,567
	7 mos.	130	536,051	197,621	780,300	83,182	272,769	13,055	546,138	23,436	938,580	120.3	—158,280	—183,392	—190,109	—191,589
Long Island	July	401	855,778	2,948,113	4,052,006	488,537	536,752	35,328	1,410,080	76,818	2,556,538	63.1	1,495,468	1,045,379	892,092	958,505
	7 mos.	401	6,655,628	14,968,801	23,103,175	3,642,257	3,902,216	240,075	9,714,793	594,385	18,176,432	78.7	4,926,743	3,559,853	2,392,773	2,827,421
New Jersey & Seashore	July	378	381,975	915,235	1,350,337	149,840	151,058	20,301	528,073	27,167	878,544	65.1	471,793	233,190	215,446	233,647
	7 mos.	378	2,899,592	3,464,965	6,671,071	1,061,675	1,123,108	119,568	3,180,623	177,733	5,667,817	85.0	1,003,254	537,258	446,199	542,424
Peoria & Pekin Union	July	19	26,052	1,813	139,343	21,672	12,967	2,207	65,721	7,042	109,609	78.7	29,734	12,734	38,244	55,346
	7 mos.	19	167,021	18,081	1,043,157	122,819	105,520	9,029	467,972	54,405	759,745	72.8	283,412	151,838	289,336	369,471
Pere Marquette	July	2,243	3,229,123	379,960	3,854,762	557.076	724,940	67,645	1,247,750	111.102	2,712,420	70.4	1,142,342	936,449	792,163	837,835
	7 mos.	2,244	22,134.565	1,868,889	25,505,201	2,899.043	5,500,907	430,705	8,718,309	787,805	18,378,839	72.1	7,126,362	5,695,617	4,850,073	4,975,148
Pittsburgh & Shawmut	July	102	149,646	1,923	155,464	23,065	40,627	1,355	41,137	8,893	115,077	74.0	40,387	39,141	41,805	48,695
	7 mos.	102	933,089	28,748	978,855	149 601	341,798	11,218	287,931	67,795	858,343	87.7	120,512	112,232	176,578	291,561
Pittsburgh & West Virginia	July	92	221,825	5,453	257,466	20,690	56,049	10,356	56,641	24,659	179,920	69.9	77,546	45,703	86,965	234,304
	7 mos.	92	2,264,322	43,114	2,529.717	155,602	436,382	68,124	512,293	183,745	1,443,080	57.0	1,086,637	744,438	1,190,250	1,353,501
Pittsburgh, Shawmut & Northern	July	198	129.461	1,645	133,115	35,494	23,808	1,492	50,106	5,543	116,443	87.5	16,672	13,732	4,188	23,150
	7 mos.	198	990,973	18,836	1,034,972	209,057	208,408	10,918	407,934	47,020	883,337	85.3	151.635	130,739	57,485	109,053
Quincy, Omaha & Kansas City	July	249	52.860	10,357	71,060	30,016	11,328	1,027	28,051	2,565	72,931	102.6	—1,871	—7,695	—11,401	—27,019
	7 mos.	249	315,779	89,184	454,374	211.665	89,383	5,654	199,284	18,356	523,289	115,2	—68,915	—109,942	—130,249	—132,404
Reading	July	1,139	5,684 862	727 718	6,725,156	1,140,639	1,711,536	74,714	2,626,511	197,561	5,756,963	85.6	968,193	669,160	809,590	1,688,562
	7 mos.	1,139	46,322,004	5,233,070	54,098,737	7,432,070	12,371,275	569,446	20,649,268	1,442,943	42,490,897	78.5	11,607,840	8,652,305	9,180,637	11,069,431
Atlantic City	July	161	109,414	492,121	624,551	65,993	37,233	20,826	251,980	4,943	381,123	61.0	243,428	203,118	161,389	251,968
	7 mos.	161	899.570	1,332.640	2,360,201	614,784	228,254	49,476	1,381,505	42,548	2,317,535	98.2	42,666	—203,219	—413,041	—124,662
Perkiomen	July	41	98,379	6,040	107,184	9,668	6,113	106	46,698	1,190	63,818	59.5	43,366	37,559	29,873	55,944
	7 mos.	41	664,444	30,358	716,358	85,586	42,908	755	323.002	8,099	460.666	64.3	255,692	221,307	171,658	267,166
Port Reading	July	19	130,188	.....	175,507	36,763	5,878	229	60,031	1,645	104,546	59.6	70,961	59,415	13,225	—45,875
	7 mos.	19	1,088,029	.....	1,454,848	223,182	54,577	1,603	509.371	18,609	807,310	55.5	647,538	531,599	73,542	64,123
Richmond, Fredericksburg & Potomac	July	117	509.507	241.167	880,164	133,726	173,804	9,299	330,147	47,397	714,592	81.2	165,572	132,280	82,751	149,112
	7 mos.	117	3,578,898	2,451,251	7,248,570	862.397	1,210,470	62,707	2,614,363	260,493	5,218,260	72.0	2,030,310	1,611,404	1,165,900	1,830,169
Rutland	July	413	311,449	105,070	545,833	106,159	90,259	10,821	205,716	13,639	428,502	78.5	117,331	86,676	91,338	96,683
	7 mos.	413	2,187,892	644,029	3,600,527	638,803	721,662	76,367	1,467.214	102,562	3,018,035	83.8	582,492	396,375	450,232	500,257
St. Louis-San Francisco	July	4,951	5,075,682	1,269,236	6,809,876	1,033,640	1,454,983	118,108	2,212.895	242,006	4,970,282	73.0	1,839,594	1,467,346	1,530,523	2,131,511
	7 mos.	4,951	36,378,052	8,178,821	48,081,084	6,654,050	9,655.409	808,857	16,099,902	1,720,563	34,491,578	71.7	13,589,506	10,910,878	11,309,473	12,386,196
Ft. Worth & Rio Grande	July	233	80,048	16,229	106,992	20,132	22,914	3,655	52,867	5,679	104,504	97.7	2,487	—1,565	—10,078	—36,351
	7 mos.	233	540,126	105,076	718,868	171,209	152.232	22,926	370,028	37,592	752,132	104.6	—33.265	—61,767	—119,833	—128,249
St. Louis, San Francisco & Texas	July	137	121,983	14,492	140,370	28,090	26,650	5,102	56,585	6,860	122,978	87.6	17,392	14,817	—8,063	23,213
	7 mos.	137	1,022,101	96,056	1,148,105	218,173	194,076	36,316	420,584	54,229	922,272	80.3	225,833	207,405	43,722	63,787

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net operating income, 1926.
St. Louis Southwestern	July	940	$1,153,282	$106,147	$1,325,927	$178,258	$219,591	$69,362	$362,083	$61,869	$904,916	68.2	$421,011	$375,837	$270,802	$279,168
	7 mos.	940	8,413,116	686,395	9,627,334	1,823,777	1,528,956	451,254	2,620,701	455,132	6,959,755	72.3	2,667,579	2,348,678	1,734,670	2,145,994
St. Louis Southwestern of Texas	July	807	458,898	55,532	563,896	194,562	119,112	30,575	254,420	34,171	639,399	113.4	—75,503	—102,252	—61,325	5,513
	7 mos.	807	3,281,091	360,725	3,980,334	1,352,827	807,567	197,577	1,697,699	232,079	4,314,287	108.4	—333,953	—522,847	—159,411	—48,143
Seaboard Air Line	July	4,318	3,425,575	647,292	4,466,000	513,872	680,527	211,171	1,775,418	207,390	3,445,321	77.1	1,020,679	741,812	746,487	874,350
	7 mos.	4,278	28,402,880	6,289,485	38,041,734	4,688,515	5,621,516	1,434,523	14,716,007	1,437,900	28,501,178	74.9	9,540,556	7,327,213	6,588,877	6,602,900
Southern Ry.	July	6,771	8,623,685	2,401,780	11,904,055	1,846,568	2,232,552	249,622	4,033,241	333,570	8,758,308	73.6	3,145,747	2,326,236	2,254,237	3,147,810
	7 mos.	6,771	62,924,646	15,743,882	85,283,462	12,698,333	15,926,268	1,820,091	29,128,100	2,384,987	62,490,065	73.3	22,793,397	17,450,192	16,489,282	18,857,504
Alabama Great Southern	July	314	610,153	177,389	837,384	148,441	179,477	20,884	263,041	23,400	642,458	76.7	195,126	128,616	165,639	224,930
	7 mos.	314	4,377,857	1,084,416	5,832,106	1,007,129	1,176,023	144,625	1,789,392	162,609	4,331,028	74.3	1,501,078	1,087,744	1,277,232	1,452,720
Cinn., New Orleans & Tex. Pacific	July	338	1,552,717	301,536	1,953,710	290,655	382,144	43,976	539,163	54,506	1,323,314	67.7	630,396	509,365	488,015	549,229
	7 mos.	338	10,051,887	2,179,319	12,959,665	2,006,682	2,593,393	304,770	3,815,154	368,089	9,198,073	71.0	3,761,592	3,017,820	2,832,006	3,548,048
Georgia Southern & Florida	July	401	249,929	85,941	360,576	75,594	61,601	8,452	149,077	8,007	304,743	84.5	55,833	34,208	35,068	30,866
	7 mos.	401	1,928,329	655,380	2,789,509	620,972	586,502	86,228	1,193,839	77,398	2,587,640	92.8	201,669	54,235	—41,836	585,170
New Orleans & Northeastern	July	204	337,452	84,799	453,229	79,018	77,828	12,824	140,059	15,332	329,560	72.7	123,669	82,085	53,110	74,105
	7 mos.	204	2,575,567	547,989	3,357,147	483,399	576,716	91,056	1,017,956	109,488	2,310,645	68.8	1,046,502	748,443	503,979	662,717
Northern Alabama	July	110	98,349	8,022	108,991	32,320	3,621	2,088	36,318	2,873	77,220	70.8	31,771	27,521	952	12,636
	7 mos.	110	730,229	56,836	806,334	159,204	29,152	16,700	259,391	19,828	484,171	60.0	322,163	282,838	107,972	112,686
Southern Pacific	July	8,933	12,883,670	3,755,725	18,399,624	2,360,642	2,983,668	402,040	6,101,149	633,858	12,843,154	69.8	5,556,470	4,013,312	3,578,376	4,541,774
	7 mos.	8,929	85,191,755	23,855,873	120,413,460	16,996,595	20,740,520	2,727,934	39,962,425	4,427,765	87,184,770	72.4	33,228,690	23,236,489	21,359,637	21,865,408
Atlantic Steamship Lines	July	...	781,788	57,689	990,005	14,212	202,904	17,962	629,147	36,751	900,976	91.0	89,029	84,856	86,212	167,703
	7 mos.	...	5,477,435	293,821	7,024,514	116,646	1,407,328	117,260	4,411,886	269,363	6,322,483	90.0	702,031	665,024	675,340	916,467
Texas & New Orleans	July	4,590	3,967,918	1,070,945	5,548,884	1,067,589	1,146,955	172,959	2,136,362	262,846	4,802,313	86.5	746,571	444,016	243,933	546,492
	7 mos.	4,566	29,000,583	7,110,451	39,530,402	7,709,923	8,231,522	1,156,160	15,047,757	1,867,722	34,133,979	86.3	5,396,423	3,381,552	1,854,052	1,810,212
Spokane, Portland & Seattle	July	554	529,397	136,177	733,692	97,950	91,105	13,037	212,800	22,776	443,573	60.5	290,119	204,980	198,426	259,965
	7 mos.	554	3,549,845	727,823	4,680,622	667,676	682,939	80,348	1,410,834	162,614	3,039,373	64.9	1,641,249	1,080,366	1,048,924	938,572
Tennessee Central	July	296	239,001	25,177	278,347	53,536	48,972	9,522	95,258	11,636	218,345	78.4	60,002	54,684	36,507	34,655
	7 mos.	296	1,614,940	172,452	1,886,277	375,635	323,635	61,347	688,467	92,420	1,539,415	81.6	346,862	307,786	193,945	145,303
Terminal Railroad Ass'n. of St. L.	July	55	.....	.....	1,056,175	206,915	86,906	2,050	444,843	22,819	766,745	72.6	289,430	190,954	276,412	434,917
	7 mos.	55	.....	.....	7,704,234	1,234,317	670,921	15,564	3,087,230	166,272	5,197,102	67.4	2,507,132	1,797,467	2,358,222	2,609,863
Texas Mexican	July	162	78,118	6,835	92,610	18,011	19,306	3,551	36,233	6,342	83,254	89.89	9,356	2,651	—3,568	38,583
	7 mos.	162	722,857	43,858	842,254	172,734	156,399	28,111	327,749	41,796	726,123	86.21	116,131	78,680	15,894	309,885
Toledo, Peoria & Western	July	239	139,662	3,579	150,074	34,647	17,648	8,205	64,219	6,448	131,117	87.4	18,957	17,957	5,130	—22,738
	7 mos.	243	846,505	44,643	951,233	230,726	141,882	53,153	419,085	50,454	895,232	94.1	56,001	35,882	—33,352	—136,166
Toledo Terminal	July	28	.....	.....	138,425	23,739	14,661	638	50,227	5,287	94,552	68.3	43,873	25,990	44,741	39,106
	7 mos.	28	.....	.....	891,731	115,346	110,294	3,846	349,719	32,196	611,401	68.6	280,330	146,083	366,862	341,283
Trinity & Brazos Valley	July	367	178,443	9,965	193,938	33,262	31,839	5,379	88,649	13,267	167,626	86.4	26,312	19,034	—2,224	128,400
	7 mos.	367	1,322,568	58,480	1,426,158	365,634	225,716	37,905	695,941	86,611	1,355,678	95.1	70,480	18,901	—138,289	—258,284
Ulster & Delaware	July	128	43,953	77,926	161,086	21,405	16,833	3,138	68,938	5,189	115,503	71.7	45,583	39,833	32,374	42,476
	7 mos.	128	296,951	126,390	661,768	130,245	116,031	11,517	332,807	35,977	626,577	94.7	35,191	—5,059	—32,389	—6,689
Union Railroad of Penna.	July	45	.....	.....	897,490	120,760	178,563	162	361,534	12,972	673,991	75.1	223,499	190,499	245,513	389,845
	7 mos.	45	.....	.....	5,915,485	836,424	1,424,801	1,135	2,750,539	93,355	5,106,138	86.3	809,347	682,210	1,155,550	1,743,395
Union Pacific	July	3,714	6,195,006	1,508,688	8,576,728	1,424,332	1,847,877	180,270	2,357,760	300,618	6,335,132	73.9	2,241,596	1,604,790	1,340,813	1,761,370
	7 mos.	3,714	40,646,334	8,966,223	54,955,222	7,674,738	12,189,609	1,286,710	15,706,622	2,154,917	40,200,383	73.2	14,754,839	9,824,027	8,803,088	10,561,809
Oregon Short Line	July	2,539	1,952,302	452,337	2,678,285	622,333	458,296	54,964	832,490	117,956	2,164,491	80.8	513,794	267,422	173,264	269,281
	7 mos.	2,538	14,219,463	2,420,536	18,143,049	3,454,744	3,292,502	376,057	5,612,704	827,156	13,962,816	77.0	4,180,233	2,399,235	1,930,530	2,481,494
Oregon, Wash. R. R. & Nav. Co.	July	2,237	1,625,802	392,036	2,252,238	451,674	382,628	107,033	827,277	115,548	1,911,629	84.9	340,609	150,406	—8,513	269,966
	7 mos.	2,237	11,265,265	2,146,438	14,884,027	3,072,676	2,566,767	561,559	5,681,504	816,888	12,888,956	86.6	1,995,071	686,840	—73,714	1,260,047
Los Angeles & Salt Lake	July	1,208	1,346,883	562,386	2,212,665	383,120	394,338	75,283	686,906	84,307	1,771,126	80.0	441,539	293,871	178,674	187,790
	7 mos.	1,208	10,119,751	2,902,051	14,509,066	2,801,431	2,956,931	577,267	4,620,260	532,688	12,185,338	84.0	2,323,728	1,378,671	697,267	939,675
St. Joseph & Grand Island	July	258	247,393	13,374	282,511	71,963	39,004	3,110	102,821	14,922	231,820	82.1	50,691	37,370	22,975	—41,050
	7 mos.	258	1,532,526	91,001	1,748,805	369,576	282,248	21,337	657,387	103,894	1,434,442	82.0	314,363	209,813	134,852	235,308
Utah	July	111	108,808	.....	108,838	10,012	38,073	397	24,639	5,169	78,290	71.9	30,548	24,064	23,233	24,527
	7 mos.	111	924,874	36	927,430	105,959	272,764	2,597	184,797	41,096	607,213	65.5	320,217	255,531	238,481	188,447
Virginian	July	545	1,536,221	52,907	1,694,614	251,048	346,616	14,212	349,035	35,063	985,045	58.1	709,569	584,550	644,156	1,028,339
	7 mos.	545	12,235,033	382,163	13,479,014	1,520,040	2,570,751	98,543	2,677,898	238,245	7,054,025	52.3	6,424,989	5,354,788	5,727,817	5,041,113
Wabash	July	2,524	4,160,102	780,454	5,343,213	951,957	970,142	170,306	2,108,015	189,884	4,402,730	82.4	940,483	749,607	498,118	905,701
	7 mos.	2,524	31,284,987	4,834,796	38,889,678	5,697,509	6,976,075	1,142,740	15,306,331	1,280,093	30,458,134	78.3	8,431,544	6,559,217	4,582,030	5,591,288
Ann Arbor	July	293	405,124	21,839	447,428	68,197	100,326	12,550	173,713	11,710	364,557	81.5	82,871	55,538	32,623	51,397
	7 mos.	293	3,041,050	143,153	3,287,040	385,022	696,326	85,755	1,290,280	81,510	2,532,966	77.1	754,074	577,132	451,387	471,299
Western Maryland	July	804	1,619,147	58,616	1,750,011	302,685	377,054	40,406	456,724	44,275	1,213,967	69.4	536,044	436,044	472,861	480,142
	7 mos.	804	12,269,321	307,150	13,016,093	1,992,572	2,813,292	270,876	3,739,997	319,106	9,140,971	70.2	3,875,122	3,175,122	3,327,062	3,025,787
Western Pacific	July	1,042	1,067,639	211,570	1,413,175	385,203	279,672	45,902	457,131	46,577	1,285,498	91.0	127,677	—755	41,708	485,727
	7 mos.	1,042	6,691,885	991,157	8,233,979	1,814,118	1,824,125	307,530	2,867,328	304,285	7,317,161	88.9	916,818	45,875	516,569	1,949,514
Wheeling & Lake Erie	July	511	1,400,850	36,790	1,567,226	214,974	392,445	33,339	465,219	41,352	1,148,905	73.3	418,321	287,269	307,781	438,963
	7 mos.	511	10,034,365	228,266	11,001,829	1,363,291	2,701,375	236,732	3,366,507	326,869	8,006,751	72.8	2,995,078	2,072,329	2,098,511	2,419,669

News of the Week

(*Continued from page* 491)

chipping hammers, pressure seated air valves, hose couplings and hose fittings. Represented by C. J. Albert and B. H. Tripp.

Cleveland Steel Tool Company, Cleveland, Ohio.—Punches, dies, rivet sets, chisel and chisel blanks for pneumatic hammers, backing out punches, coupling nuts, etc. Represented by H. W. Leighton.

Cleveland Twist Drill Company, The, Cleveland, Ohio.—High speed twist drills, locomotive reamers, quick set reamers, screw extractor, reamers and drills. Represented by W. L. Evans, H. Berquist and H. S. White.

Colonial Steel Company, Chicago.—Literature. Represented by W. L. Thurber.

Crucible Steel Company of America, New York.—Tool steels. Represented by F. Baskerfield, R. D. Fletcher and J. H. Jones.

Desmond Stephen Manufacturing Company, The, Urbana, Ohio.—Grinding wheel dressers, wheel truing tools, industrial diamonds and ball bearing dressers. Represented by H. A. Williams.

Duff Manufacturing Company, The, Pittsburgh, Pa.—Governor controlled self-lowering jacks, ratchet jacks, push and pull jacks and journal jacks. Represented by C. N. Thulin and E. E. Thulin.

J. Faessler Manufacturing Company, Moberly, Mo.—Boilermaker tools, side and main rods, bearing rollers. Represented by G. R. Maupin and A. C. Ruse.

Federal Machinery Sales Company, Chicago.—Geometric self-opening die heads and collapsing taps, tapping devices, quick change chucks, electric drills, grinders, buffers and discs. Represented by N. A. Booz and E. H. Lunde.

Firth Sterling Steel Company, Chicago.—Tool steel. Represented by E. T. Jackman, A. Jackman and C. E. Hughes.

Foster-Johnson Reamer Company, Elkhart, Ind.—Hand expansion reamers. Represented by F. M. Enos and L. Groessl.

Goddard & Goddard Co., Detroit, Mich.—Milling cutters. Represented by C. S. Goddard, C. H. Wallace, K. W. Legg and H. S. Huncke.

Green, Tweed & Co., New York.—Reversible ratchet wrench for heavy duty nut turning. Represented by F. J. Hill.

Greenfield Tap & Die Corp., Greenfield, Mass.—Screw plates, taps, dies, drills, reamers, gages, tap wrenches, pipe wrenches, and five-flute tap comparator. Represented by C. C. Zeigler and W. F. Beyer.

Hunter Saw & Machine Co., Pittsburgh, Pa.—High speed cut-off machine with rotating device, pneumatic rivet sets and saws. Represented by F. A. Hunter, J. A. Carothers and P. W. Wendt.

Independent Pneumatic Tool Company, Chicago.—Pneumatic and electric tools. Represented by R. S. Cooper, A. A. Anderson, A. A. Langdon, I. T. Cruice, G. J. Cowell, W. A. Nugent, W. H. Hamerly and O. Dallman.

Ingersoll-Rand Company, Chicago.—Pneumatic drills, pneumatic hammers, pneumatic grinders, pneumatic saws and rivet sets. Represented by F. M. Cross, G. C. Kehrer, T. E. Forbes, R. W. Bailey.

Jones & Lamson Machine Company, Springfield, Vt.—Bolt-turning and threading attachment for Hartness flat turret lathes, taper turner for either straight or taper turning, automatic die heads, and screw thread comparator. Represented by J. C. Price, G. S. McClellan and R. O. Beardsley.

Keller, William H., Inc., Grand Haven, Mich.—Pneumatic riveting hammers, pneumatic chipping hammers, pneumatic drills, pneumatic grinders, pneumatic rammers and pneumatic saws. Represented by E. Shaff, W. E. Hall, G. S. Warren, E. J. Biederman and D. Woodbead.

King Pneumatic Tool Company, Chicago.—Riveting hammers, chipping hammers and pneumatic tool accessories. Represented by D. Butler, J. M. Butler and F. H. Revell.

Latrobe Tool Company, Latrobe, Pa.—High speed twist drills, flat drills, bridge reamers, locomotive reamers, flue cutters, tool bits and woodworking knives. Represented by R. S. Carter, J. A. Dilger, J. L. Ackerman, M. Honig and R. A. Ammon.

Lovejoy Tool Works, Chicago.—Boilermakers' tools, rivet set clips, re-cupping tools, drill sleeves, staybolt headers, flue-cutters, flue-hole cutters, chucks and flue-opening pins. Represented by W. H. Dangel and Tom Brown.

MacLean-Fogg Lock Nut Company, Chicago.—Lock nuts. Represented by J. A. MacLean, J. W. Fegg and F. O'Leary.

Manning, Maxwell & Moore, Inc., Chicago.—Air pump grinder, lathes, grinders, portable tools, drill and tap grinders and punches and shears. Represented by E. D. Garfield, J. P. Groome, P. P. Wagener, C. A. Cote, W. A. Deems, W. E. Whipp, H. L. Saunders, W. G. Baldenhofer, H. H. Yerk, H. H. Moor and R. S. Dean.

Morse Twist Drill & Machine Co., New Bedford, Mass.—Drills, reamers, taps, dies, milling cutters, etc. Represented by J. G. Barr and S. W. Cabral.

Norton, A. O., Inc., Chicago.—Jacks. Represented by R. J. McKay and E. W. Hanegan.

Norton Company, Worcester, Mass.—Grinding wheels and segmental chuck. Represented by H. K. Clark and G. W. Thomson.

O. K. Tool Company, Inc., The, Shelton, Conn.—System of holders and tools for lathes, planers, shapers, boring mills and special machines, and inserted blade milling cutters. Represented by E. E. Fiege.

Pratt & Whitney Co., Hartford, Conn.—Improved design inserted blade cutters for slabbing, staybolt taps and frame reamers. Represented by F. A. Armstrong, E. E. Cullison, R. Lafler and W. R. Mullinix.

Racine Tool & Machine Co., Racine, Wis.—High speed hack saw machines, shear-cut production hack saw machine and metal cutting band saw machine. Represented by M. E. Erskine, E. R. Larson and W. Reinhardt, Jr.

Rich Tool Company, Detroit, Mich.—Rivet sets, tire tools, oil filters for gas-electric locomotives. Represented by W. B. Sullivan, L. H. Whiteside, C. M. Conner and J. W. Mull, Jr.

Ridge Tool Company, The, Elyria, Ohio.—Pipe wrenches, pipe cutters and pipe vises. Represented by J. E. Lawrence.

Simmons-Boardman Publishing Company, New York.—Magazine, Railway Age and Railway Mechanical Engineer. Represented by H. A. Morrison, E. L. Woodward, J. M. Rutherford and R. F. Duysters.

Simonds Saw & Steel Co., Chicago.—Hard edge hack saw blades, all hard power saw blades, metal cutting band saws, files, high speed tool holder bits, hack saw frames, inserted tooth metal saws, solid tooth circular metal saws and metal slitting saws. Represented by J. V. Moore and C. A. Fee.

Skinner Chuck Company, The, New Britain, Conn.—Lathe and drill chucks, air-operated chucks and stock racks. Represented by D. M. Stevenson.

Snap-on Wrench Company, Chicago.—Socket wrenches. Represented by C. H. Tennyson and J. Johnson.

Standard Form and Equipment Co., Chicago.—Pipe wrenches. Represented by N. B. McKeagan and W. E. Brooks.

Standard Tool Company, The, Cleveland, Ohio.—Twist drills, reamers, taps, milling cutters and drill chucks. Represented by J. H. Brinker, F. C. Selzer and J. Taylor.

Starrett Company, The L. S., Athol, Mass.—Precision tools and vises. Represented by A. W. Smith and H. C. Grielow.

Sterling Products Company, Chicago.—Circular relief reamer, tap grinder and safety appliances. Represented by C. W. Mader and W. C. Teare.

Union Manufacturing Company, New Britain, Conn.—Chucks, all types for production work and tool room, hoists and all steel hand hoists. Represented by E. I. Stevens and H. S. Huncke.

Union Twist Drill Company, Athol, Mass.—Milling and gear cutters, drills, reamers, taps and dies. Represented by E. E. Caswell, R. W. Richtmyre and A. E. Goldthwaite.

Vanadium Alloys Steel Company, Latrobe, Pa.—Catalogues. Represented by S. A. Miniece and W. R. Mau.

Whitman-Barnes, Detroit, Mich.—Twist drills, reamers, milling cutters, etc. Represented by M. J. Kearins.

Locomotive Model and Track Exhibits at Baltimore

Thirty-one models of antique locomotives will form one of the exhibits in the Hall of Transportation at the Baltimore & Ohio Centenary Exhibition and Pageant, beginning with the first conception of a steam locomotive in the 17th century and then showing the improvements made up to 1850. English and American designs predominate. Following is a chronological list:

Newton's Idea, 1680, the germ of propulsion by steam on land.

The "Cugnot," 1769, (French) the first practical attempt to accomplish it.

Trevithick III, 1803, demonstrating that passengers could be hauled by steam.

Evans' Scow, 1804, first practical adaptation of steam to land propulsion.

Blenkinsopp, 1811, first locomotive applied commercially for a railway.

Brunton, 1813, first "grasshopper" type of locomotive.

Hedley's Model, 1813, showing the adhesion of smooth wheels to smooth rails.

Switching Locomotive Built Jointly for the Lehigh Valley by the McIntosh & Seymour Corporation, the General Electric Company and the J. G. Brill Company, Branch of the American Car & Foundry Company.

The engine is of the 12-cylinder, vee type operating on the four-cycle air-injection full-Diesel principle. It develops 300 b.hp. at a full-load speed of 550 r.p.m. Tractive force at slow speed, 40,000 lbs. It was purchased for service in the 149th Street Terminal Yard, New York City.

Puffing Billy, 1813, initial locomotive with smooth drivers.
Blucher, 1814, the English inventor Stephenson's first locomotive.
Sequin, 1826, first locomotive with multituler boiler.
Stourbridge Lion, 1829, first locomotive to run in America.
Tom Thumb, 1829, first American-built locomotive.
Rocket, 1829, built by Stephenson and winner of the English trials.
Sans Pareil, 1829, which ran in the English competition.
Novelty, 1829, another competitor in the English race.
Howard, 1829, first locomotive patented on the American Continent.
Mercury, 1830, first of Stephenson's "planet" type.
Best Friend, 1830, America's first locomotive in actual service.
York, 1831, winner of the Baltimore and Ohio trials.
Remodelled York, 1831, one of the most efficient of the early types.
Johnson, 1831, Maryland's first to be designed and constructed.
James I., 1831, a competitor in the Baltimore and Ohio trials.
Costell, 1831, first Philadelphia built locomotive.
Childs, 1831, first locomotive with rotary engine.
James II., 1832, first locomotive in the world with link motion.
Old Ironsides, 1832, Baldwin's first.
Jervis Experiment, 1832, the locomotive having the first forward truck.
South Carolina, 1832, first horizontal double locomotive in the world.
Hercules, 1837, first locomotive with equalizing beams and levers.
Sandusky, 1837, first locomotive built by Thomas Rogers.
Winans' Camelback, 1848, first of the large, powerful type in America.

Ten sections of track, 30 ft. long, so arranged as to give a complete picture in chronological order of the development of rail construction during the past century will be among the exhibits outside the main buildings.

The first section shows part of the original main tracks of the Baltimore & Ohio constructed between Baltimore and Ellicott Mills in 1829-1830. These tracks consist of long "stringers" or timbers of tough yellow pine to which is fastened an iron strap rail, over which the early locomotives ran. The rails used in this section were found holding up the back porch of an old farmhouse in Carroll County, Maryland.

The second section of track is made of rectangular blocks of heavy stone, instead of wood, placed end to end and overlaid with the iron strap rail. This track represents another type of rail used on the main line between Baltimore and Ellicott Mills in 1830.

The next two sections show improvements made in 1835 and in 1842, although the wooden stringers were still on the lines between Relay, Md., and Washington, D. C., and between Harper's Ferry, W. Va., and Cumberland, Md.

The year 1852 is represented by a section of cross tie and "T" rail construction as built in the original main track between Cumberland, Md., and Wheeling, W. Va. This rail is of the John Brown or pear-shaped section. It was made of iron and weighed about 60 lb. per yard. This was the first time on the Baltimore & Ohio that rail was placed directly on cross-ties, similar to present usage.

Succeeding sections show the progress made in more modern track construction, as the rails gradually became heavier, stronger and more efficient up to the heavy 130-pound rails laid on chemically treated cross-ties, showing the present standard of track construction.

Traffic

The Kansas City Southern has opened a freight and passenger office at Oklahoma City, Okla., 609 Colcord building, in charge of Lewis S. Wickes.

"Cross Sections of Opportunity" is the title of a pamphlet which has been issued by the Gulf, Mobile & Northern, through its Development Department (Mobile, Ala.) describing the agricultural and industrial advantages of the territory along the line of that road in Mississippi and Tennessee. Numerous illustrations show the rich resources of the country in agriculture and minerals.

Railroads, members of the Southwestern Freight Bureau, have filed with the Interstate Commerce Commission a petition for a postponement for 90 days from December 5 of the effective date of its orders in the Consolidated Southwestern Cases, in which the commission prescribed a series of mileage scales to apply in place of the various bases now in effect. The petition says that it will be physically impossible for the roads to comply with the orders in the time named.

To the Fight and Back, $575

Thomas Cook & Son, the tourist agents, announce that on September 22, starting from Curtis Field at 7 a.m. Eastern time, they will take passengers from New York to Chicago by airplane, to see the Tunney-Dempsey championship contest; and, after suitable entertainment at Hotel Stevens, and following the close of the entertainment, will bring them back so as to arrive at Curtis Field early on the evening of September 23. Each passenger may take 30 lb. of baggage, and the round trip fare is $575.

The firm has experience in airplane travel, having participated in this department of the tourist business in Europe since 1919.

Agricultural Development on Long Island

The retirement on pension of H. B. Fullerton, director of the agricultural department on the Long Island, calls attention to the record of this company in this field, beginning in 1905, when it supplemented its efforts to popularize Long Island as a residential district by others demonstrating the value of the soil. President Peters told the agricultural director to find "the poorest ten acres on the North Shore" and to establish an experiment station. This was done, and the next year a tract of 80 acres was acquired at Medford, and there Mr. Fullerton cultivated with success 982 varieties of plant life. His experiments and the results of his work became widely known and the farm was visited by agricultural experts from all parts of America and from Europe. The farm is now to be sold. Mr. Fullerton, acting for an American committee, after the war, went to France where he participated in agricultural reconstruction work. He is succeeded as director of agricultural development by his wife, who has participated in his labors for some years past.

On the day of his retirement his fellow officers, high and low, to the number of fifty, gave him a dinner. H. B. Fullerton was born in Cincinnati, Ohio, in 1857, and was educated at Massachusetts Institute of Technology and at the University of Cincinnati. He entered the service of the Long Island in 1897 as special agent of the passenger department.

Advisory Board Meetings in September

The following shippers' regional advisory boards will hold meetings in September: Ohio Valley Shippers' Advisory Board, on September 13, at Louisville, Ky.; Pacific Coast Transportation Advisory Board, on September 16, at San Francisco, Cal.; Trans-Missouri-Kansas Shippers' Advisory Board, on September 20, at Tulsa, Okla.; Southwest Shippers' Advisory Board, on September 22, at Beaumont, Texas; New England Shippers' Advisory Board, on September 23, at Burlington, Vt.; Allegheny Shippers' Advisory Board, on September 28, at Clarksburg, W. Va.; and Great Lakes Regional Advisory Board, on September 28, at Detroit, Mich.

Examiner Finds Divisions in the Aggregate Not Unreasonable

The Interstate Commerce Commission on September 6 made public a report proposed by Attorney-Examiner William A. Disque, relating to part of the commission's proceeding of inquiry into the propriety of the divisions of joint rates of the principal carriers in western territory. He recommends a finding by the commission that the divisions in the aggregate north and south of Kansas City and St. Louis, Mo., and East St. Louis, Cairo and Thebes, Ill., respectively of the joint rates on freight traffic in general between points in western trunk line territory, on the one hand, and points in the Southwest, on the other, are not unreasonable, inequitable, or otherwise unlawful. The report says that no convincing showing has been made to justify affirmative action on the part of the commission with respect to the divisions in the aggregate, but that there is much reason to believe that a constructive revision of individual divisions by the carriers interested would be warranted. Many of the divisions involved in the proceeding were revised by informal action of the carriers on July 1, 1925. In the part of the proceeding dealt with in the report the western trunk lines having little or no mileage in the Southwest actively sought increases in their divisions and are referred to as complainants, while the southwestern lines, which the report says are mainly seeking merely to hold what they have, are referred to as defendants.

Foreign

A Correction

In the *Railway Age* of September 3 in an account of an accident on an Alpine railway line, the place of the accident was given as Switzerland. The accident, however, actually occurred in French territory near the Swiss border.

La Pas-Yungas Railway in Bolivia to Be Completed

President Siles of Bolivia has announced that the La Paz-Yungas Railway, the initial construction of which was begun in 1915, will be completed at once, according to advices to the Department of Commerce. The Yungas is a sub-tropical valley which begins 60 miles north of La Paz and supplies that city with the greater part of its food supply. The President has appointed a commission to go into the entire question of the most feasible and best route that should be taken. Since the beginning of the construction of the railway, there has been a discussion as to whether or not it should be built to Cocorico, one of the capitals of the Yungas, or in the direction of the river El Beni. Thus far the railway has been extended 130 miles; if completed to the head of steam navigation on the river El Beni, as originally planned, about 88 miles of additional construction would be required.

General Tie-up in Queensland

The government of Queensland, Australia, on September 3 dismissed from service employees of the government railways members of the Australian Railwaymen's Union, who refused to assist in transporting sugar to a mill they had put on the "black list." The government promised a "skeleton" service, but this is reported as unmaterialized, with all traffic virtally at standstill.

The union declared that if the government refused to take the men back a transportation blockade of Queensland would be effected. The government has been signing up volunteers to have them operate the railways.

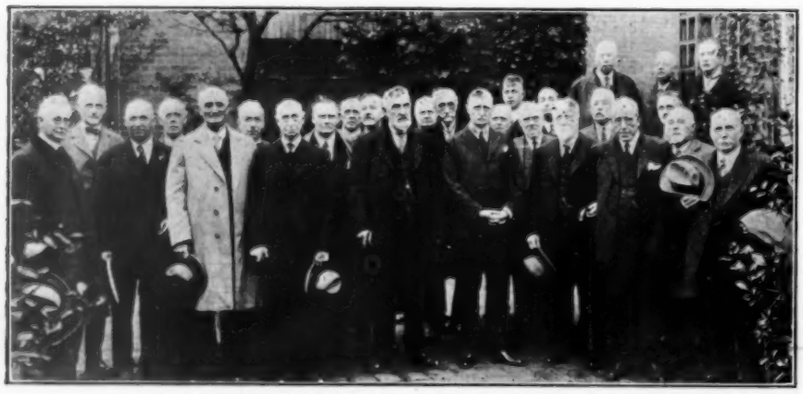
Premier McCormack, speaking before the Assembly, it was reported in an Associated Press dispatch from Brisbane,, said that even if it meant political extinction, he would resist what he characterized as revoluntionary attempts by the unions to coerce the Ministry in the railway crisis. Capitulation before this challenge would make the position of the Administration impossible, he added.

British Railways Take Steps to Meet Motor Coach Competition

The motor coach is rapidly becoming keen competitors of British Railways for the hauling of many classes of passenger traffic, according to Trade Commissioner William M. Park, London, in a report to the Department of Commerce. This competition is felt most severely in connection with holiday traveling and suburban traffic within a radius of about 40 miles from London. To meet the competition the Southern Railway has announced a scheme of half-fare traveling facilities available on ordinary trains within more than 100 selected zones on the system. Other railway companies are likewise considering the introduction of somewhat similar concessions.

The railway companies state that wherever motor-coach competition is being felt it is their purpose to inaugurate cheap traveling facilities, and it is understood that they have made such cuts possible by the following general agreement: Any company may issue, on any week-day, from 10 o'clock in the morning, and on Sunday at the same time, round-trip tickets at single fares between points not further distant than 40 miles, where road competition comes into being.

The motor bus and motor coach companies are confident that what is termed "the challenge of the railway companies" will not immediately affect them.



C. P. R. Veterans at Vancouver at Lunch Celebrating Fortieth Anniversary of Arrival of First Train

The British Ambassador to the United States, Sir Esme Howard (with Portfolio)

Equipment and Supplies

Orders for Passenger Cars Placed in Week

The week in the equipment market was another comparatively quiet one. There was some activity, however, in the passenger car market. The Reading placed an order for 5 combination baggage and mail cars with the American Car & Foundry Company. The same road placed an order for 5 combination baggage and mail cars with the Bethlehem Steel Company.

While there was no activity in the locomotive market, the Erie placed an order for 15 locomotive tenders with the Baldwin company. The only display of interest in the freight car market was the Carnegie Steel Company's inquiry for from 16 to 24 hot metal cars.

The iron and steel market continued active with several railroads placing orders for bridge steel as well as for other structural steel.

Details of these and other items of equipment news will be found in the following divisions.

Locomotives

THE ERIE has ordered 15 locomotive tenders from the Baldwin Locomotive Works.

Freight Cars

THE CARNEGIE STEEL COMPANY is inquiring for from 16 to 24 hot metal cars of 70 tons' capacity.

Passenger Cars

THE READING has ordered 5 combination baggage and mail cars from the American Car & Foundry Company and 5 from the Bethlehem Steel Company. Inquiry for this equipment was reported in the *Railway Age* of August 6. The Reading will build 2 express horse cars in its own shops.

Iron and Steel

THE PENNSYLVANIA has ordered 375 tons of steel for use in its West Philadelphia subway, from the American Bridge Company.

THE BOSTON & MAINE has ordered 200 tons of steel for a bridge at Lowell, Mass., from the Phoenix Bridge Company.

THE ERIE is inquiring for 150 tons of steel for a bridge, and has ordered 175 tons from the American Bridge Company.

THE DENVER & RIO GRANDE WESTERN has ordered 500 tons of structural steel from the American Bridge Company.

THE CLEVELAND UNION TERMINAL COMPANY is inquiring for 2,500 tons of structural steel for bridge work required in connection with its new station project.

THE BALTIMORE & OHIO has ordered 125 tons of steel for a bridge at Wheeling, W. Va., from the American Bridge Company, and has placed an order for 1,000 tons with the McClintic-Marshall Company.

Machinery and Tools

THE NEW YORK CENTRAL has ordered a 90-in. quartering and crank pin turning machine from the Niles-Bement-Pond Company.

Signaling

THE PENNSYLVANIA has placed order with the Union Switch & Signal Company for an electro-mechanical interlocking, six working levers, for installation at Rendcomb Junction, Ohio; also one for Undercliff Yard, Cincinnati, Ohio, eight working levers.

THE NEW YORK, ONTARIO & WESTERN proposes to install automatic block signals on its south bound track between Poyntelle and Mayfield Yard, Pa., 22 miles, and order has been placed with the Union Switch & Signal Company for the materials.

Miscellaneous

THE GRAND TRUNK is planning the construction of a car ferry for operation between Grand Haven, Mich., and Milwaukee, Wis.

THE DANISH STATE RAILWAYS have just completed a series of successful trial runs with a new Danish Diesel locomotive on the Naestved-Ringsted line, according to advices to the Department of Commerce from Assistant Trade Commissioner Harold Nelson, Jr., Copenhagen. The State Railways have now decided to adopt this type of locomotives exclusively on the line in question.

New Haven Station, Providence, R. I., with State Capitol in Background

Supply Trade

The Charles R. Long, Jr., Company, on September 7, opened its new plant at Sixteenth and Hill streets, Louisville, Ky.

The **Harnischfeger Corporation,** Milwaukee, Wis., has opened a branch office at 524 Buder building, St. Louis, Mo. **L. J. DeHoney,** sales engineer, is in charge.

The Wade Engineering Company, Los Angeles, Cal., representative of the **Lincoln Electric Company,** Cleveland, Ohio, has moved its northern office from Oakland, Cal., to 533 Market Street, San Francisco.

F. T. Whitney, for the past three years in charge of the Philadelphia territory for the **Cohoes Rolling Mill Company,** Cohoes, N. Y., makers of wrought iron pipe, has been appointed sales manager, with headquarters at Cohoes.

General Railway Signal Company to Sell Stock

The directors of the General Railway Signal Company have decided to give stockholders the privilege of subscribing for additional stock. Each common stockholder will be entitled to purchase additional shares of common stock in an amount equal to his holdings of record at the close of the business on September 14 at a price of $110 a share, and each preferred stockholder will be entitled to purchase additional shares of preferred stock in an amount equal to one-tenth of its holdings of record on the same date at $105 per share and accrued dividends. The rights to purchase additional shares expire on October 4. The company now has outstanding 325,000 shares of common stock and 25,759 shares of preferred, the total authorized being respectively 500,000 shares and 40,000 shares. The preferred stock pays $6 dividends and the common $5 a share, payable quarterly in each case.

Union Switch & Signal Company Appointments

B. T. Anderson, superintendent of signals of the Chesapeake & Ohio, has resigned to become assistant to the vice-president of the Union Switch & Signal Company, Swissvale, Pa. A photograph of Mr. Anderson and a sketch of his career are published in this issue in the Railway Officers' column.

Walter P. Allen, resident manager, eastern district, at New York, has been appointed eastern manager, with headquarters at 150 Broadway, New York, and his former position has been abolished. Mr. Allen entered the service of the Pennsylvania in its telegraph department on November 16, 1892. He was transfered to the signal department in July, 1893, and was appointed foreman in August, 1901. In October, 1905, he was appointed signal supervisor and the following February became inspector of signals. Since July, 1916, Mr. Allen has served as resident manager of the Union Switch & Signal Co., and now becomes eastern manager, with headquarters at New York.

W. P. Allen

H. W. Griffin and H. McCready have been appointed assistant eastern managers.

S. J. Turreff has been appointed assistant resident manager, southwestern district, with headquarters at St. Louis, Mo.

C. M. Wheeler, formerly supervisor of telegraph and signals, Pittsburgh division, Pennsylvania Railroad, has entered the service of the Union Switch & Signal Co., as sales engineer in the eastern district, reporting to the eastern manager.

Obituary

O. L. Yocum, service engineer of the Hulson Grate Company, Keokuk, Iowa, was accidentally killed on September 3, near Browning, Ill.

Construction

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to Jerome A. Moss for the construction of a fruit unloading shed, 12 ft. by 1,500 ft., at Chicago, to cost $20,000.

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to Marsh Bros. & Gardenier, San Francisco, Calif., for the moving of about 150,000 cu. yd. of earth required for the relocation of the main line to provide for extensions to the east end of the yard at Barstow, Calif.

ATCHISON, TOPEKA & SANTA FE.—Plans for the construction of a viaduct at Banner street, Topeka, Kan., have been temporarily held up as a result of an application for an injunction filed in the district court by property owners who allege that the construction of the new viaduct will cause their property to depreciate and that no provisions have been made to reimburse them.

BALTIMORE & OHIO.—This road plans the erection of a steel bridge at Wheeling, W. Va.

BALTIMORE & OHIO.—This road has let a constract to Milo P. Hanke of Cincinnati, O., for the construction of water treating plants at Wellsboro and McCool, Ind., to cost $34,000.

BALTIMORE & OHIO.—The Interstate Commerce Commission has authorized the Toledo & Cincinnati, a subsidiary of the Baltimore & Ohio, to construct two extensions, aggregating 4.3 miles, in Butler county, Ohio; estimated cost $1,305,000.

BOSTON & MAINE.—This road will construct a steel bridge at Lowell, Mass.

BOSTON & MAINE.—A contract has been let to the New England Construction Company of Springfield, Mass., for the rebuilding of a bridge at Gerrish, N. H., to cost $25,000.

CENTRAL VERMONT.—A contract has been awarded to the Roberts & Schaeffer Co., Chicago, for the construction of an "N & W" type cinder plant at Burlington, Vt.

CHICAGO, BURLINGTON & QUINCY.—Plans are being prepared for the construction of a passenger station at Torrington, Wyo.

CLOQUET AND NORTHERN LUMBER COMPANY, Cloquet, Minn.—This company has awarded a contract to Campbell and Sheils of that city for the construction of 36 miles of logging railroad from Cascade Lake to Rose Lake on the Canadian border. At present, a 59-mile line of the Duluth and Northeastern is in operation from Cloquet to Hornby where it connects with the Duluth and Iron Range. From this point, work has been started on the construction of a line which will connect the Duluth and Northeastern with the abandoned Alger-Smith line, which will be used by the new road for 24 miles, as far as Cascade Lake. The new line will pass through the Minnesota Arrowhead country and the Hungry Jack, Clearwater and Bearskin Lakes district.

DELAWARE & HUDSON.—A contract has been let to R. B. Porter & Son, Scranton, Pa., for the elimination of the grade crossing at Green Ridge and East Market streets, Scranton, Pa.

FORT WORTH & DENVER SOUTH PLAINS.—This company is closing bids, September 15, for the construction of two passenger and freight stations at Quitaque, Tex., and Turkey, and five section houses along this line.

MISSOURI PACIFIC.—A contract has been placed with Roberts & Schaeffer Co., for the construction of two two-track "N & W" type cinder handling plants at Ewing avenue, St. Louis, Mo.

NEW YORK CENTRAL.—A contract has been let to the Arthur McMullen Company, New York, for multiple tracking and duct lines at Fort Washington Park, N. Y., which will cost about $200,000.

NEW YORK CENTRAL.—A contract has been awarded to the National Boiler Washing Company, of Chicago, Ill., for a boiler washing system in the new engine house at Harmon, N. Y. The McMyler Interstate Company of Bedford, O., has been awarded a contract for electric gantry cranes at Syracuse and Rochester, N. Y. William M. Ballard, Inc., of Syracuse, N. Y., has been let a contract for the reconstruction of a bridge at Clarks Mills, N. Y. A contract has been awarded to the Walsh Construction Company of Syracuse, N. Y., for third and fourth tracking from Garrison to Beacon, N. Y. Another contract has been awarded to H. H. Sherwin & Co., of New York, for the construction of duct lines and splicing chambers between West 138th and West 176th streets in New York. A contract has also been let to the P. T. Cox Contracting Co., Inc., of New York, for changes in existing splicing chambers and relocating Twelfth avenue between West 136th and West 138th streets, in New York.

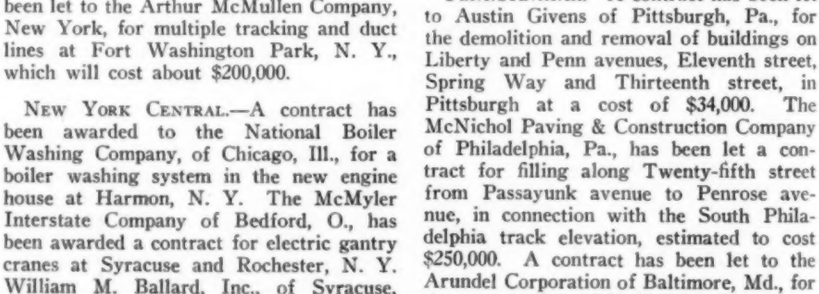
NEW YORK, NEW HAVEN & HARTFORD.—A contract has been placed with Roberts & Schaeffer Co., for a 200-ton capacity reinforced concrete automatic electric locomotive coaling plant and an "N & W" type cinder handling plant at Lamberton street, New Haven, Conn.

NEW YORK, NEW HAVEN & HARTFORD.—A contract has been awarded to the Turner Construction Company, New York, for the construction of a brick and steel shed 148 ft. wide by 760 ft. long, to provide facilities for the American Railway Express, at the Harlem river in New York, to cost $400,000.

NORTHERN PACIFIC.—An extension, 100 ft. by 150 ft. to Pier 5 on the central waterfront at Seattle, Wash., is being constructed at a cost of $55,000. A contract for part of the work has been awarded to the McEachren Construction Company of Seattle.

PENNSYLVANIA.—A contract has been let to Austin Givens of Pittsburgh, Pa., for the demolition and removal of buildings on Liberty and Penn avenues, Eleventh street, Spring Way and Thirteenth street, in Pittsburgh at a cost of $34,000. The McNichol Paving & Construction Company of Philadelphia, Pa., has been let a contract for filling along Twenty-fifth street from Passayunk avenue to Penrose avenue, in connection with the South Philadelphia track elevation, estimated to cost $250,000. A contract has been let to the Arundel Corporation of Baltimore, Md., for the construction of bulkheads, ferry racks float bridge foundations and masonry for two bridges at Little Creek, Va., at a cost of $300,000.

WESTERN PACIFIC.—This company has applied to the Interstate Commerce Commission for authority for the construction of about 3 miles of line connecting its lines with those of the Union Belt Railroad and the Alameda Belt Line in Oakland and Alameda, Calif.



Courtesy D. T. & I. Railroad News

Brakemen on D. T. & I. Carry a Whistle to Use as Warning Signal in Spotting Cars

Financial

BOSTON & MAINE.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $30,942,000 of 5 per cent bonds, to provide the means of paying, refunding or retiring a like amount of bonds maturing at various dates from January 1, 1929, to 1941, most of which bear interest at 6 per cent. Part of the bonds are to be exchanged directly and the balance is to be sold to a syndicate composed of Kidder, Peabody & Co., Lee, Higginson & Co., and Harris, Forbes & Co., Inc. Offer of the bonds by the syndicate at 93¼, to yield 5.41 per cent, was reported in the *Railway Age* of September 3.

CHESAPEAKE & OHIO.—*Brief of Minority Stockholders Opposes Acquisition of Control of Erie and Pere Marquette.*—The committee representing the minority stockholders of the C. & O., which is opposing the application to the Interstate Commerce Commission for authority to acquire stock control of the Erie and Pere Marquette, has filed with the Interstate Commerce Commission a brief asserting that "the proposal, though in the name of the Chesapeake & Ohio, is in effect an effort on the part of O. P. and M. J. Van Sweringen and their financial associates in control of the Chesapeake to consummate, with the commission's approval, and at large personal profit to themselves, a plan to create a new and fourth transportation system in eastern trunk line territory, which is economically unsound, unjustifiable in cost to the Chesapeake, and, if approved, cannot fail but prejudice the ultimate plan of railroad consolidation." A statement is included calculating the profits to be derived by the Van Sweringens and their associates from their transactions in the securities of the companies involved at $55,954,817. One of the points made is that it is impractical and unwise to attempt to create general trunk lines out of coal-carrying railroads.

A brief was also filed on behalf of seven short line railroads asking that if the commission finds the granting of the application in other respects to be in the public interest it attach an express condition that the applicant, within a named period, shall make provisions for the inclusion in the proposed system of the Arcade & Attica, Arcade & Betsey River, Chicago, Attica & Southern, Morehead & North Fork, Mt. Jewett, Kinzua & Riterville, New York & Pennsylvania, and the Prattsburgh.

GREAT NORTHERN PACIFIC.—*Modification of Merger Plan Proposed.*—The Interstate Commerce Commission has issued an order permitting Mrs. Clara Hill Lindley, daughter of the late James J. Hill, and her husband, E. C. Lindley, formerly vice-president of the Great Northern, to intervene in the proceedings on the application for authority for the acquisition of control of the Great Northern, Northern Pacific and Spokane, Portland & Seattle by this company.

ILLINOIS CENTRAL. — *Equipment-Trust Certificates.*—The Interstate Commerce Commission has approved the issuance of $8,460,000 4½ per cent equipment-trust certificates, series O, to be sold to the Guaranty Company of New York at 100.171, giving an average annual cost to the carrier of approximately 4.473 per cent. In selling the certificates, the carrier solicited bids from 45 banking firms and received 10 offers from 23 firms bidding individually or with others. The equipment includes 15 locomotives, 16 passenger train cars and 4,500 freight train cars, having a total approximate cost of $11,296,936.

LACKAWANNA SECURITIES CO.—*Special Meeting.*—A special meeting of stockholders has been called for October 14 when power will be asked by the directors to dispose of all or any of the bonds owned by the new company at the directors' discretion. These bonds include the $58,500,000 Glen Alden Coal Company, 4 per cent, first mortgage bonds recently transferred to the new company by the Delaware, Lackawanna & Western. It is stated unofficially that there is no intention of liquidating the securities company, but that the new company plans to retain the Glen Alden bonds and to pay out in dividends on its 844,411 no par shares $3.50 and possibly $4 a share annually.

LEHIGH & NEW ENGLAND.—*Equipment-Trust Certificates.*—The Interstate Commerce Commission has approved the issuance of $750,000 4½ per cent equipment-trust certificates, series F, to be offered for sale through competitive bidding to the highest bidder but at a price of not less than 99, on which basis the average annual cost to the carrier will be approximately 4.658 per cent. The equipment includes 8 locomotives, 1 gas-electric passenger car and 200 steel box cars, having a total approximate cost of $921,321.

MISSOURI-KANSAS-TEXAS. — *Valuation Hearing Postponed.*—The Interstate Commerce Commission has postponed from September 8 to September 20 the hearing before Examiner Kephart on the tentative valuation of the property of this company and subsidiaries.

SEABOARD AIR LINE.—*Hearing on Tentative Valuation.*—The Interstate Commerce Commission has postponed from September 12 to October 1 the hearing on this company's tentative valuation before Examiner Faris at Washington.

SOUTHERN.—*Hearings on Valuation.*—The Interstate Commerce Commission has assigned the tentative valuation reports on the properties of this company and subsidiaries for further hearing at Washington on October 24 before Examiners Marchand and Conway.

WHEELING & LAKE ERIE.—*Representation of Trunk Lines on Directorate.*—Numerous briefs have been filed with the Interstate Commerce Commission on the application of officers and directors of the Baltimore & Ohio, N. Y. Central and New York, Chicago & St. Louis for authority to serve as directors of the Wheeling company, which is opposed by the Pittsburgh & West Virginia and the Wabash. The briefs on behalf of the trunk lines point to the proposal as in furtherance of the "four-system" plan for the grouping of the eastern railroads which they have recommended to the commission. The two opposing companies assert that control of the Wheeling by the trunk lines would result in a suppression of competition and a diversion of traffic from routes of which they form a part. The P. & W. V. brief says the question whether the commission is ready to say that the Wheeling shall be allocated as part of the four-system plan lies at the heart of the case. A brief filed on behalf of W. L. Ross, president of the Nickel Plate, says that no objection openly urged by the P. & W. V. has any basis unless it be its commitment to the "five-system" plan in which the Wabash, W. & L. E., P. & W. V., Buffalo, Rochester & Pittsburgh and Delaware & Hudson would form the nucleus of a fifth system, and if that be the explanation the three trunk lines have as much warrant for charging that the P. & W. V. would use its influence to throw business to the Wabash as it has for its charges against them. The Wabash brief says that if the commission should approve the applications the principle involved in such a result could be logically carried out only by assignment to the Wabash and the P. & W. V. of proportionate interests in the Wheeling.

WESTERN PACIFIC.—*Bonds.*—The Interstate Commerce Commission has issued a supplemental order authorizing the sale of $2,678,500 of an issue of $2,950,000 of first mortgage 5 per cent bonds previously authorized, on competitive bidding at not less than 99.5.

WYOMING & MISSOURI RIVER.—*Abandonment.*—The Interstate Commerce Commission has issued a certicate authorizing this company to abandon its line from Belle Fourche, Butte County, S. D., to Aladdin, Crook County, Wyo., 17.64 miles.

Average Price of Stocks and Bonds

	Sept. 6	Last week	Last year
Average price of 20 representative railway stocks..	120.88	118.18	105.74
Average price of 20 representative railway bonds..	94.95	94.99	91.24

Dividends Declared

Delaware & Hudson.—2½ per cent, quarterly, payable September 20 to holders of record August 27.

Delaware, Lackawanna & Western.—Dividend per share, one-half share of Lackawanna Securities Company stock, payable to holders of record September 6.

St. Louis Southwestern.—Preferred, 1¼ per cent, quarterly, payable September 30 to holders of record September 15.

Valuation Reports

The Interstate Commerce Commission has issued valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes as of the respective valuation dates as follows:

Final Reports

Watertown & Sioux Falls....	$1,673,000	1918
Missouri & North Arkansas..	9,148,460	1919
Gulf, Mobile & Northern....	10,715,000	1917

Tentative Reports

Wilmington Railway Bridge Co. ..... (owned but not used)	256,000	1917

Railway Officers

Executive

L. N. Bassett, general superintendent of the Wichita Falls & Southern, with headquarters at Wichita Falls, Tex., has been elected vice-president and general manager, with the same headquarters. The office of assistant manager has been abolished.

Edward M. Durham, Jr., who has been elected to the newly created position of senior vice-president of the Missouri Pacific with jurisdiction over all departments, with headquarters at St. Louis, Mo., was born on October 23, 1875, at Memphis, Tenn., and was graduated from Lehigh University in 1896. He was employed from 1896 to 1897 as a member of a party which made a hydrographic survey of the Ouachita river for the United States War Department, and until 1899 as recorder for the deep waterways commission for the state of New York. He began his railway career in that year as a transitman with the Chicago & North Western and in 1900 was appointed an

E. M. Durham, Jr.

assistant engineer on the Southern. From that time until 1920 he was promoted successively to resident engineer, principal assistant engineer, assistant chief engineer and chief engineer. His railway service during that time also included two years as valuation engineer for the Atlanta, Birmingham & Atlantic and two years as executive general agent for the Southern. In 1920 he was appointed manager of the department of way and structures of the United States Railroad Administration, with headquarters at Washington, D. C. In November, 1923, he was made director of the division of liquidation claims, where he remained until 1924, when he was appointed assistant to the president of the Missouri Pacific. On September 1, 1926, he was elected vice-president, which position he held up until his recent election.

N. D. Ballantine, assistant to the president of the Seaboard Air Line, with headquarters at Baltimore, Md., has resigned and has established an office as consulting engineer on railway and motor transport matters, with headquarters in the Transportation Building, New York City. Mr. Ballantine was born on March 12, 1872, at Boonville, Mo.., and entered railway service in 1886 as a messenger in the telegraph department of the Kansas City, Fort Scott & Memphis (now a part of the St. Louis-San Francisco) and until 1892, was consecutively clerk, operator, stenographer and electrician on the same road. During 1892 he was ticket agent for the Manitou & Pikes Peak, and from 1893 until 1896, was electrician on the Kansas City, Fort Scott & Memphis. From 1896 until October, 1898, Mr. Ballantine was auditor of the Manitou & Pikes Peak, and from the latter date until July, 1899, was secretary to the general manager of the Kansas City, Pittsburgh & Gulf (now a part of the Kansas City Southern). From July, 1899, until September, 1903, he served as superintendent of telegraph of the same road, and was then appointed superintendent of transportation of the Kansas City Southern, which position he held until January 1, 1906. From January 1, 1906, until June 1, 1912. Mr. Ballantine was superintendent of car service of the Chicago, Rock Island & Pacific, and from the latter date until November, 1917, was assistant to the second vice-president of the same road. From November, 1917, until January, 1918, he served as major in the Engineering Corps of the United States Army, and from January to September, 1918 was a major in the Signal Corps in command of the 416th Railroad Telegraph Battalion. Mr. Ballantine served as general superintendent of transportation of the American Expeditionary Forces from September, 1918, until June, 1919, having been commissioned lieutenant-colonel in April, 1919. On July 1, 1919, he became special assistant manager of the Car Service division, United States Railroad Administration, which position he held untl March 1, 1920. On April 1, 1920, Mr. Ballantine became superintendent of transportation of the Union Pacific, and in March, 1923, became assistant to the president of the Seaboard Air Line, which position he was holding at the time of his resignation to engage in consulting work.

Operating

C. L. Burpee has been appointed terminal trainmaster of the Atlantic Coast Line, with headquarters at Jacksonville, Fla., succeeding **Max Hair,** who has been assigned to other duties.

John M. Condon, who has been appointed general manager of the New York district of the Erie, with headquarters at Jersey City, N. J., was born on November 24, 1883, at Galion, O., and was educated in high school at Galion. He entered railway service in September, 1900, with the Cleveland, Cincinnati, Chicago & St. Louis, and from April, 1901, until 1903, was in yard service on the Erie at Galion. From 1903 until 1905 he was night yardmaster, and from the latter date until 1912, was general yardmaster of the same road. From 1912 until 1914 he was in train

J. M. Condon

service on the Southern Pacific and the Atchison, Topeka & Santa Fe at Bakersfield, Cal. On January 1, 1914, Mr. Condon became general yardmaster of the Erie at Marion, O., which position he held until April, 1916, when he became inspector of transportation of the same road. From September, 1916, until October, 1917, he was trainmaster at Marion, and then served as assistant superintendent of the same road at Youngstown, O. Mr. Condon was then appointed superintendent of terminals at Jersey City, N. J., where he remained until May 15, 1920. At that time he was appointed superintendent of the New York division and Side Lines of the same road. On June 15, 1921, he was also appointed superintendent of the New York, Susquehanna & Western (part of the Erie). In the early part of 1927, when the regions of the Erie were reorganized into districts, Mr. Condon became superintendent of the New York district, with the same headquarters, which position he was holding at the time of his recent appointment as general manager.

W. J. McWhorter, who has been appointed superintendent of the Nashville division of the Nashville, Chattanooga & St. Louis, was born at McDaniels, Ga., on February 7, 1883, and entered railway service in 1900 as a telegraph operator on the Georgia Railway at Atlanta, Ga. He entered the employ of the Nashville Chattanooga & St. Louis in 1904 as an agent and operator on the Atlanta division, which position he held until 1905, when he was appointed copy operator in the dispatcher's office at Atlanta. On July

15, 1906, he was promoted to dispatcher at Atlanta, which position he held until April, 1916, when he was advanced to chief dispatcher. On November 1, 1917, he was promoted to trainmaster on the Atlanta division and on July 16, 1924, was appointed assistant superintendent at Bruceton, Tenn., which position he has held until the time of his recent promotion.

Traffic

Harry W. VonWiller has been appointed general agent of the Erie, with headquarters at Springfield, O.

S. G. Porter, assistant manager of the department of natural resources of the Canadian Pacific, with headquarters at Calgary, Alta., has been promoted to manager, with the same headquarters, to succeed **P. L. Naismith,** resigned.

Henry E. Bulla, general agent, passenger department, of the Chicago Great Western, with headquarters at Omaha, Nebr., has been promoted to general agent, with headquarters at Des Moines, Iowa, to succeed **Marshall B. Craig,** who has resigned. Mr. Bulla will be succeeded by **Eugene M. Peck,** district passenger agent, with headquarters at Kansas City, Mo., who in turn will be succeeded by **Conrad McGougan,** city passenger and ticket agent, with headquarters at Des Moines, Iowa.

Mechanical

E. B. Hall, who has been promoted to general superintendent of motive power and machinery of the Chicago & North Western, to succeed **H. T. Bentley,** who has been retired under the

E. B. Hall

pension rules of the company, was born on December 1, 1870, at Parkersburg, Iowa, and entered railway service on September 23, 1889, as an engine caretaker on the Chicago & North Western at Eagle Grove, Iowa. and Hawarden. Later he became a machinist helper, which position he held until 1892 when he was made a locomotive fireman. He continued in this employment until 1898, when he was promoted to locomotive engineman. On September 23, 1907, he was appointed road foreman of engines on the Sioux City division at Sioux City, Iowa, which position he held until March 1, 1910, when he was promoted to master mechanic on the Northern Iowa and Sioux City division with headquarters at Eagle Grove. From May 1, 1912, to December, 1914, he was master mechanic of the Wisconsin division with headquarters at Chicago,

H. L. Harvey

and from the latter date until 1914 he was assistant to the general superintendent of motive power at Chicago, handling labor matters. From 1917 to February 1, 1919, he was assistant superintendent of the Wisconsin division at Milwaukee, Wis., and on the latter date was appointed assistant superintendent of motive power and machinery at Chicago, with jurisdiction over lines west of Chicago, including the lines west of the Missouri river. From December, 1919, to May 1, 1922, he was principal assistant superintendent of motive power and machinery at Chicago, with jurisdiction over the entire system. On the latter date he was promoted to superintendent of motive power and machinery, a position he has held until his recent promotion. **H. L. Harvey,** who succeeds Mr. Hall as superintendent of motive power and machinery, was born on July 9, 1874, and entered the employ of the Chicago & North Western on September 11, 1899, as a locomotive fireman. He was promoted to locomotive engineer in December, 1906, and was appointed traveling fireman in January, 1907. From the latter date until April, 1912, he was traveling fireman, trainmaster and assistant road foreman of engines. In August, 1917, he was promoted to master mechanic of the Iowa and Minnesota divisions with headquarters at Belle Plaine, Iowa, which position he held until August, 1918, when he was promoted to general fuel supervisor with headquarters at Chicago. He held this position until December, 1919, when he was promoted to assistant superintendent of motive power and machinery, which he has held until his recent promotion.

Engineering, Maintenance of Way and Signaling

F. Lee, engineer maintenance of way of the Canadian Pacific, with headquarters at Winnipeg, Man., has been promoted to district engineer of the British Columbia district, with headquarters at Vancouver, B. C.

Burt T. Anderson, superintendent of signals of the Chesapeake & Ohio, who has resigned to become assistant to the vice-president and general manager of the Union Switch & Signal Company, was born October 31, 1884, at Alexis, Ill., and was graduated from the University of Illinois in 1907 with a B. S. degree in electrical engineering. He entered the signal apprenticeship course of the Union Switch & Signal Company in July, 1907, and was engaged for some time in the installation of automatic signals on the Lake Shore & Michigan Southern, now a part of the New York Central, and in alternating current signal construction work on the Hudson & Manhattan and the Pennsylvania terminal installation in New York. About half of his three-year apprenticeship course with the Union company was spent at the Swissvale plant. On June 1, 1910, he entered the employ of the Atchison, Topeka & Santa Fe as a draftsman, being promoted on October 1 of that year to construction foreman on an alternating current signal installation, his headquarters being at Barstow, Ariz. He was appointed assistant signal engineer of the Atchison, Topeka & Santa Fe in March, 1913, which position he held until June, 1914, when he resigned to become assistant signal engineer on the Delaware, Lackawanna & Western. On June 1, 1923, Mr. Ander-

B. T. Anderson

son left the Lackawanna to become superintendent of signals on the Chesapeake & Ohio, with headquarters at Richmond, Va., which position he has held until his recent appointment.

Carl A. Taylor, who succeeds Mr. Anderson as signal engineer of the Chesapeake & Ohio, was born at Kenton, Del., on June 15, 1891, and completed a four-year course in electrical en-

gineering at the University of Delaware. He entered railway service on the Pennsylvania in September, 1912, as a signal repairman and was appointed signal apprentice in July, 1913, which position he held until August, 1916, when he was made signal foreman at Altoona, Pa. Later he was appointed assistant inspector of signals, with headquarters in the office of the signal engineer at Philadelphia, and in July, 1917, was appointed assistant supervisor of signals at Trenton, N. J. Several months later he was transferred to Philadelphia in the same position and in August, 1921 was appointed assistant supervisor of telegraph and signals. In March, 1924, he entered the employ of the Chesapeake & Ohio as signal office engineer and on August 1, 1925, was appointed assistant superintendent of signals, which position he has held until his recent appointment.

C. A. Taylor

Thomas L. Phillips who has been appointed principal assistant engineer of the Western Pacific with headquarters at San Francisco, Calif., was born on December 28, 1881, at Alsea, Ore. He entered railway service in March, 1902, as a levelman on railroad location for the Santa Fe and engaged in other various engineering projects until November, 1905. From November, 1905, to July, 1908, he was resident engineer on the construction of the Western Pacific at Niles, Calif., and from the latter date until August, 1910, was assistant engineer on construction at the San Francisco Terminal. From this date until August, 1918, he was assistant engineer on the location and construction of various projects, including a branch line from Reno Junction, Calif., to Reno, Nev. On this date, he was appointed division engineer of the Western division with headquarters at Sacramento, Calif., which position he held until July, 1920, when he was made chief engineer of the Hutchinson Lumber Company, Oroville, Calif., in charge of the location and construction of 25 miles of railroad, including the construction of sawmills. In March, 1921, he re-entered the employ of the Western Pacific as assistant engineer with headquarters at San Francisco, which position he has held until his recent appointment.

Purchases and Stores

H. R. Duncan, traveling storekeeper of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed superintendent of timber preservation, with headquarters at Galesburg, Ill., to succeed **J. H. Waterman,** who has retired under the pension rules of the company.

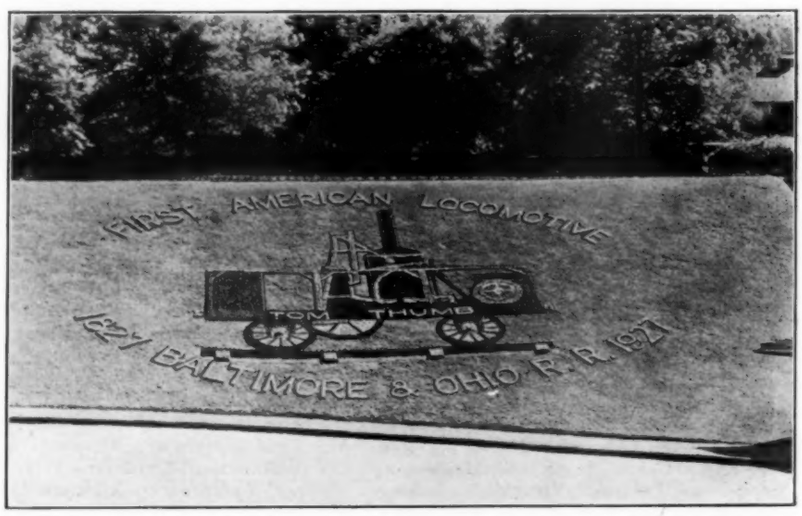
Special

Robert S. Binkerd, vice-chairman of the Committee on Public Relations of the Eastern Railroads, with headquarters at New York, has resigned effective October 1 to become a general partner in the New York stock exchange firm of James H. Oliphant & Co. It is not planned to name a successor to the vice-chairmanship of the Public Relations Committee, but the work will be carried on with the present organization under the direction of Chairman E. E. Loomis, president of the Lehigh Valley, with the assistance of **J. M. Fitzgerald** and **H. H. Hertell,** who have been appointed assistants to the chairman of the committee. Mr. Binkerd was born in Dayton, Ohio, on November 7, 1882, and was graduated from Yale University in 1904. Thereafter for four years he was secretary of the Municipal Voters' League at Buffalo, N. Y. In 1908 and 1909 he served as secretary of the Citizens' Union in New York and in the same capacity with the City Club of New York from 1909 to 1917. In the latter year he became advisor to the Fusion Committee in the New York City municipal election and later in the same year joined the organization of the Association of Railway Executives in New York as assistant to the chairman. In 1922 he was appointed vice-chairman of the Committee on Public Relations of the Eastern Railroads and has served in that capacity since.

R. S. Binkerd

Obituary

Elwood L. Wilson, assistant passenger traffic manager of the New York New Haven & Hartford, with headquarters at Boston, Mass., died on September 1, at his summer home in Plymouth. Mr. Wilson was born on August 18, 1872, at Bridgeville, Del., and received a high school education. He entered railway service in 1892, with the Pennsylvania at Philadelphia, and since January 22, 1894, has been with the New York, New Haven & Hartford. He served for many years as assistant general passenger agent, and in 1924 was appointed assistant passenger traffic manager, which position he was holding at the time of his death.



A Floral Reproduction of the B. & O.'s "Tom Thumb" Near Mt. Royal Station, Baltimore—Contains Over 26,000 Plants